THE IRON AGE

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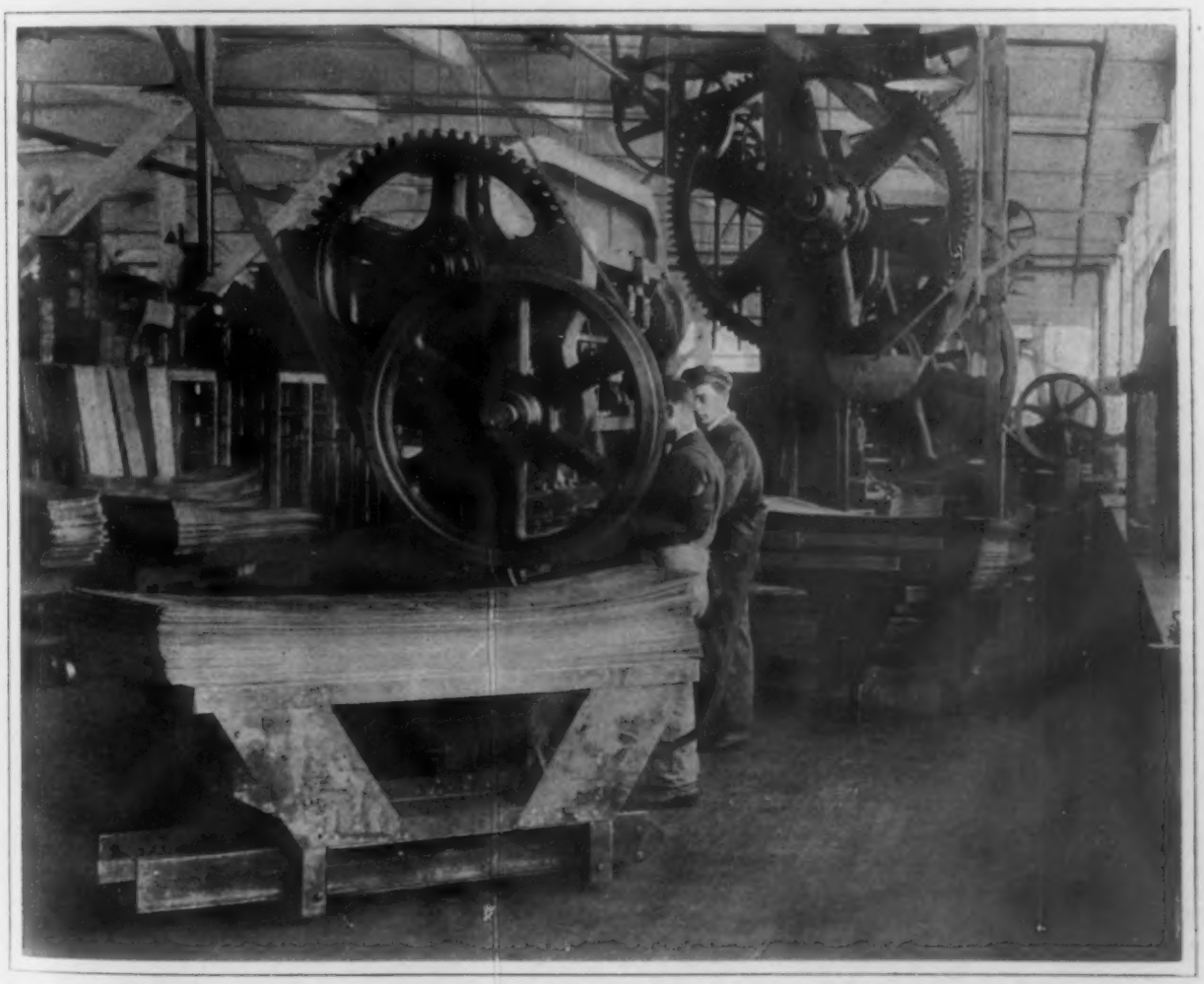
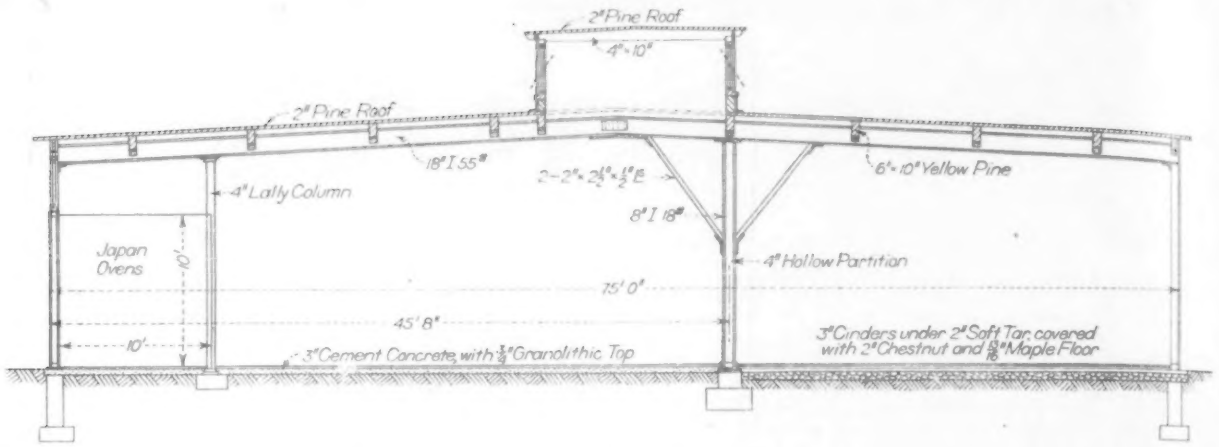
A Factory Built at 60 Cents Per Square Foot

The Hart & Hutchinson Plant at New Britain, Conn.—Details of the Construction—Steel Strips to Prevent Floor Wear

The creation of the new factory of the Hart & Hutchinson Company, New Britain, Conn., manufacturer of steel lockers, was unusual in that the building was constructed under plans furnished by a mill engineer who guaranteed a maximum cost of 60 cents per square foot of floor space, including everything above ground after filling and levelling. The company had acquired the locker business of the Hart & Cooley Company, with the privilege of continuing the manufacture of the product in the latter's plant for a limited period only. Under the original plans for a factory, the lowest figure submitted by contractors was 88 cents per square foot. Then along came the engineer in question with plans which carried with them an agreement that the factory should be constructed on a 60-cent basis. Under his proposition, if he failed, he was to receive no compensation. He did not fail. The results are wholly satisfactory. In New Britain the custom is to go up in the air to secure space; the usual factory products are light in weight, but the Hart & Hutchinson Company departed from this practice and confined its plant to one floor, because of the greater economy where the product is heavy



Press Department, Showing the Transportable Tables for Holding Material Conveniently for the Machine Operators



To Accommodate the Japanning Department, the Interior Columns Were Set Toward One Side Requiring the Splicing of Roof Beams at the Center Line

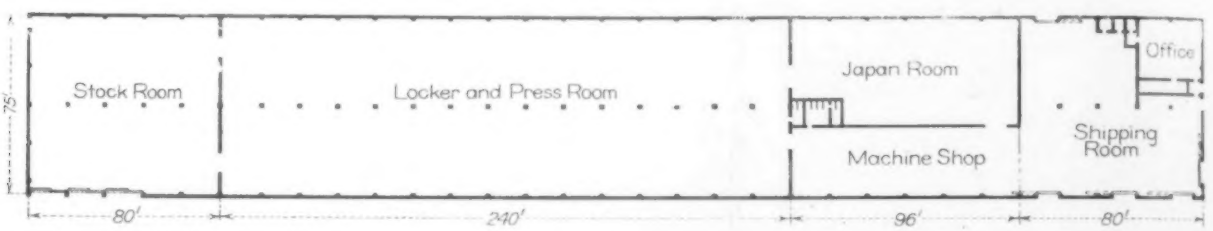


Diagram of the Hart & Hutchinson Works

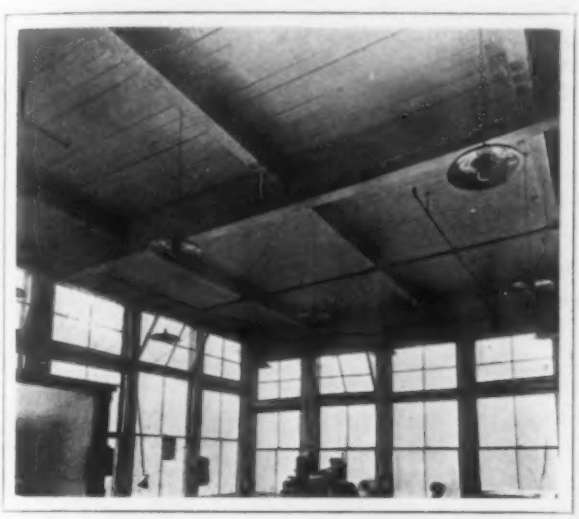
and somewhat bulky. As a consequence at least in part, the total payroll has decreased, while production has increased about 50 per cent. as compared to what had been accomplished in the old factory, one reason being the better opportunity for scientific routing, and another the fewer foremen required, for even a working foreman constitutes an additional overhead cost.

The site is excellent. Little desirable land for industrial purposes is available in the central portion of New Britain, and therefore the company purchased a large area within the city limits but in the suburbs, lying between the Western Division of the New York, New Haven & Hartford Railroad and the double track interurban electric line of the Connecticut Company, which connects the city with Plainville. For the present a siding from the steam railroad is not practical, because of the difference in grade, but eventually the New York, New Haven & Hartford will lower its tracks at this point to get rid of an expensive grade, which will bring them to the desired level. In the meantime the electric line affords ample facilities. Freight cars are hauled to and from the factory siding, and a regular trolley express service takes care of smaller shipments. This spur track was laid out very carefully as to grade. It dips from the main line, until the car floors are level with the loading platform of the shipping department, and ascends until at the receiving end of the shop the tracks are level with the

How the Angle Irons and Other Semi-finished Products Are Stored

factory floor, permitting the unloading of heavy materials by gravity.

Although the land secured for the building site is somewhat low, there is plenty of slope to take care of the drainage. The floor is laid without supporting timbers. The ground was leveled up 2 ft. below the floor level and then filled in with gravel rolled hard and compact, and upon this about 12 in. of ashes was placed and rolled to a 6-in. thickness, and then 3 in. of hot sand and tar, into which 2-in. chestnut planks were tamped, and on top of this was placed the finished flooring of 1-in. hard maple. An unusual feature of the floor is the use of steel strips placed on edge between the boards in those areas which are traversed by trucks. The steel strips, which were recently brought out by the Stanley Works, New Britain, as described some time ago in these columns, are of the nature of angle



The Window Construction and the Wooden Ceiling Timbers Supported by the I-beams

irons. The edges, being flush with the wood surface, take the greater portion of the wear. They are giving much satisfaction under conditions of severe usage.

The main building is 500 ft. long and 75 ft. wide with one row of posts through the center. These posts are on 16-ft. centers leaving almost an unobstructed floor space of 75 x 500 ft. The sides are practically all double glazed windows, affording ample light in the darkest days. Between the 18-in. steel I-beams are longitudinal 6 x 10-in. wooden purlins on 8-ft. centers which carry the roof. This roof is of the ordinary pitched type with a monitor over the section used by the japanning department. In order to get additional room in this department, it has been necessary to set the posts 8 ft. off center. This was taken care of by splicing the I-beams at the ridge, as indicated in an accompanying drawing.

At the front of the building are the offices and the shipping department, and back of them are the japanning department (cut off from the rest of the structure by a fire wall) and the machine shop, while at the rear, occupying most of the space of the structure are the manufacturing departments. Up the center are racks for the storage of finished and semi-finished products, while at the rear of the factory is the storage for steel.

Bolivian exports of minerals in the form of concentrates 40 to 78 per cent. pure were as follows in 1913 in metric tons: Tin, 44,594 (38,614 in 1912); copper, 4019 (4707 in 1912); tungsten, 282 (474 in 1912); zinc, 7367 (8961 in 1912), and lead, 1763 (1074 in 1912).

Ventilation Standards for Factories

A set of minimum ventilation requirements for public and semi-public buildings has been prepared by a committee of the American Society of Heating and Ventilating Engineers as a basis for legislation which the society can recommend. The recommendation of the standards for factories is given below. The committee is composed of Prof. James D. Hoffman, professor of mechanical engineering, University of Nebraska, Lincoln, Neb.; Dr. E. Vernon Hill, Department of Health, Chicago, and Frank T. Chapman, Eastern manager Vento Department, American Radiator Company, New York.

A minimum floor area of 25 sq. ft., and a minimum cubic space of 250 cu. ft. per occupant shall be provided in all work rooms and no work room, of which occupancy is taken after the date of issuance of this provision, shall have less than a clear hight of 10 ft.

A positive supply of outdoor air from an uncontaminated source shall be provided the work room at all times during working hours, and the quantity of this positive supply of outdoor air shall be based upon a minimum requirement of 1500 cu. ft. per hour per occupant.

The distribution of the supplied outdoor air shall be so arranged as to maintain the temperature requirement without uncomfortable drafts, or any draft lower than 60 deg. F. in occupied spaces. A test of proper air supply and distribution will be that the CO_2 content in any occupied part of a work room shall not at any time exceed 10 parts in 10,000 parts of air, based upon tests taken in a zone from 3 ft. to 6 ft. above the floor line.

The temperature of the air in the work room shall, at all times during working hours, be maintained throughout the actual working spaces, within the range of 60 deg. to 72 deg. F., depending upon the class of work and workers—except when the outside temperature is sufficiently high that artificial heating in the building is not required or when the particular class of manufacture or work requires or makes desirable other temperatures that may be approved by the department of health. The temperature of the air in offices shall be maintained during occupancy within the range of 65 deg. to 70 deg. F.; in wash, dressing and locker rooms during working hours, 60 deg. to 70 deg. F., and in toilet rooms 55 deg. to 68 deg. F.

Accurate thermometers, properly protected by open wire shields, shall be provided, set and maintained at a hight of 5 ft. from the floor of all work rooms, at least one thermometer for every 2000 sq. ft. of floor area. In addition, there shall be provided one such thermometer in each office, wash room, toilet room and locker room.

If in the opinion of the department of health the air supply to any building is deemed impure or especially dust laden, filters, air washers or other appliances, satisfactory to the department, may be required.

Industrial Engineering at Cornell

An industrial engineering department has been established in Sibley College, Cornell University, Ithaca, N. Y. It is intended to meet an increasing demand from the commercial side of the industry for technically trained men. The department will be under the immediate charge of Prof. D. S. Kimball, professor of machine design at Cornell and the author of books and papers on industrial management. The new course will be offered to seniors in the next college year and besides industrial engineering and industrial design will cover accounting, business law, government control of injury, etc.

Pipes of asphalt-paper, a special German product, are replacing iron, steel, copper and clay pipes in Austria for conveying everything but hot fluids, concentrated acids and petroleum.

Blast-Furnace Charging Apparatus

Special Designs with Subsequent Improvements to Insure Thorough Distribution in the Stack

BY FRANK C. ROBERTS

When the application of labor-saving devices to the handling of the materials to be delivered into the blast furnace was first seriously considered, it was speedily recognized that little could be expected unless some suitable means were found for delivering the materials into the furnace proper, in such manner that there would result a reasonably uniform distribution both of volume and of coarse and fine materials over the cross section of the furnace. It was also quite generally concluded that the double skip hoist prescnted the simplest method of elevating the materials from the stock house level to the top of the furnace, a conclusion which added to the difficulties by reason of the fact that the discharge from a skip car has a natural tendency in itself to roughly separate the contents into coarse and fine materials.

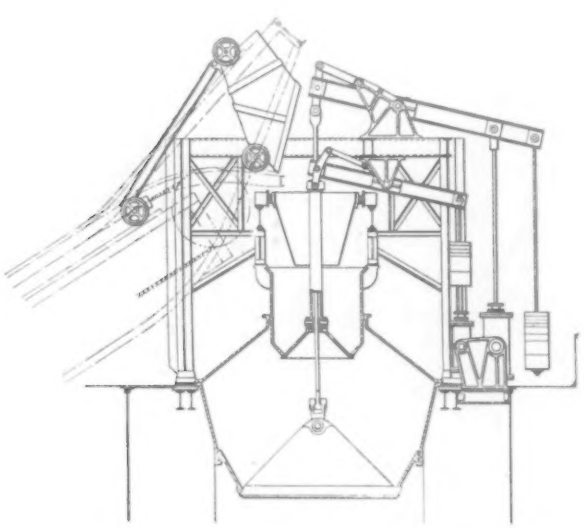
MAIN AND SUPPLEMENTARY HOPPERS

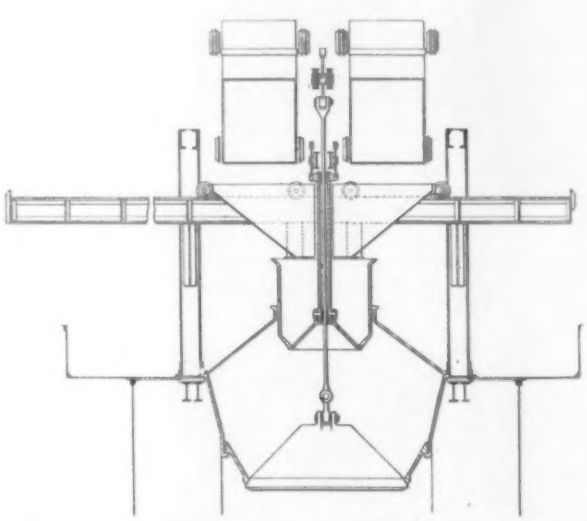
With the foregoing conditions in mind, the writer designed the furnace charging apparatus illustrated in Figs. 1 and 2 in 1898. This equipment was first placed in use in 1899 at the Lebanon furnaces in Lebanon, Pa., and subsequently at many other plants. In essence, the apparatus consists of the main bell and hopper, a supplementary bell and hopper placed concentrically above the former, and two adjustable chutes, one on each side of the supplementary hopper, designed to conduct the materials discharged by the skip cars of a double skip hoist into the supplementary hopper. These chutes are so constructed that the coarse materials discharged from the skip car rebound from the side of the chute opposite the skip car and become remixed with the finer materials as they pass through the chute, the whole mass of material having its direction of flow deflected at right angles to the direction in which it leaves the skip car.

Again, the chutes are carried on wheels and are so designed that they may be adjusted backward or forward and may also be twisted horizontally. The chutes discharge into the supplementary hopper around the central bell rod and the adjustment of the chutes is provided in order to vary the opening of discharge by increasing or decreasing it or by providing more opening on one side of the bell rod than on the other, and thereby controlling the distribution in the hopper. A traveling crane carried by crane girders provides convenient means for the renewal of parts; the crane girders also support the supplementary hopper. The arrangement of levers and operating cylinders is evident; the latter are equipped with steam cushions. The distribution secured by this design of apparatus, both as to volume and coarse and fine materials, proved quite satisfactory, so much so in fact that it is still in use.

REVOLVING THE SUPPLEMENTARY HOPPER

Subsequently, it occurred to the writer that a more thorough distribution in the furnace might result if the already good distribution in the supplementary hopper, which must necessarily be somewhat similar in each filling of the supplementary hopper, should be further distributed by revolving the supplementary hopper and discharging its contents into the main hopper at various points in its revolution. It was very evident that provision could be made for revolving the supplementary hopper in Figs. 1 and 2, by providing a rack on the hopper engaging with a pinion operated by an electric motor. These conditions led to the design of apparatus shown in Figs. 3 and 4, which was first placed in use in 1905. It will be noted that this design is practically identical with that shown in Figs. 1 and 2, except that means are provided for revolving the supplementary hopper.





Figs. 1 and 2—Stationary Main and Supplementary Hoppers for Charging Blast Furnaces

This charging apparatus may be operated as follows:

(a) The supplementary hopper may be stationary while materials are dumped into it and on receiving its charge may be revolved any desired

fixed number of degrees, by means of a limit switch control of the motor, before it is discharged.

While the distribution is undoubtedly improved by this method of operation, yet it is equally true that it leads to the concentration of fine materials at fixed points in the furnace. To illustrate—when the hopper is filled with coke while stationary, the fine material which dribbles into the hopper is concentrated in a comparatively narrow segment of the hopper and when revolved a fixed number of degrees this same fine material is ultimately discharged into the furnace at one of four fixed segments of the furnace, there being generally four points in the circumference at which the hopper is discharged in succession. The writer therefore prefers the following methods of operation:

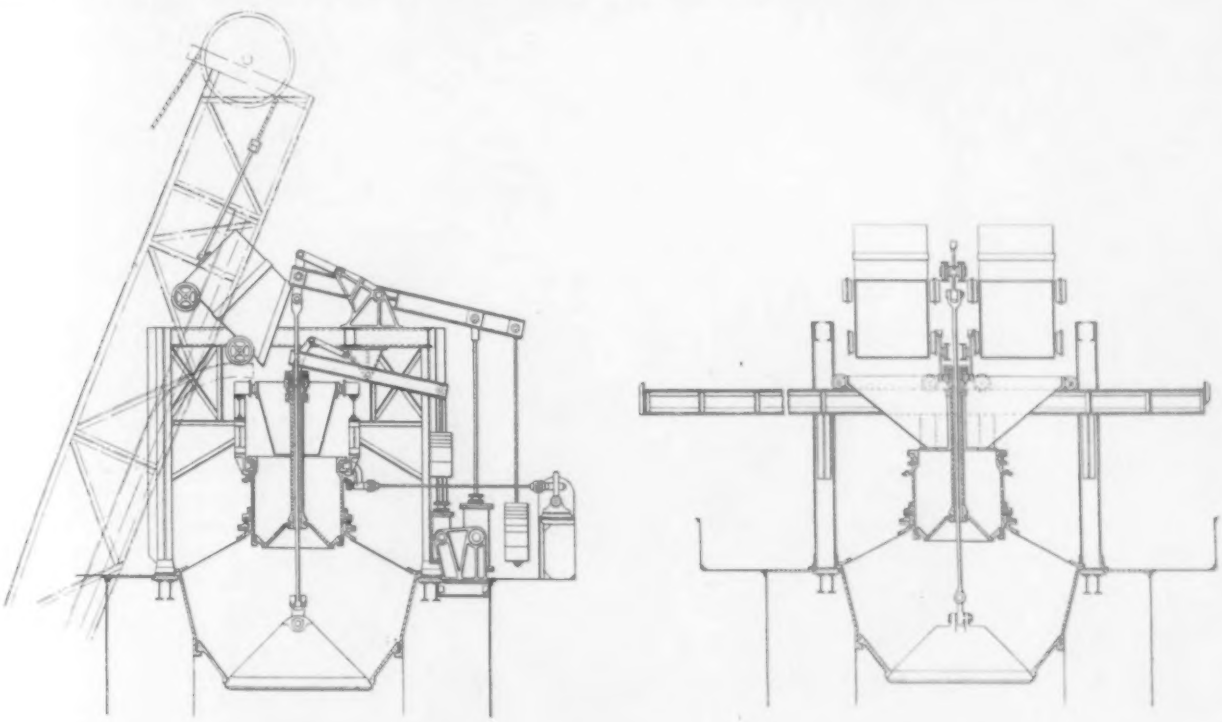
(b) The supplementary hopper may be revolved while it is being filled with materials and discharged of its contents while it is stationary. By this method a much better distribution of materials is secured within the supplementary hopper than under the method outlined in (a), and the fine material referred to under (a) is distributed around the hopper and ultimately around the furnace cross section.

(c) The supplementary hopper may be revolved continuously. In this event, the revolving of the hopper while the materials are being delivered into it leads to the advantages stated under (b), and the discharge of the hopper at constantly varying points in its revolution avoids the possible concentration of any particular distribution of fine and coarse materials at fixed points in the furnace. Under the doctrine of chances and without fixed points for discharge, it is very unlikely that the hopper would be emptied twice at the same point in its revolution during a considerable period of time.

UNIFORMITY AN IMPORTANT FACTOR

It is generally recognized that uniformity is a very important factor in the conditions governing blast-furnace operations, and the writer believes that the methods of charging outlined under (b) and (c) will give better results in the uniformity of the distribution of volume and of fine and coarse materials over the cross section of the furnace than the method described under (a) and that of the two, method (c) is preferable to (b). Methods (b) and (c) are covered by patents granted in 1912.

Fig. 5 shows a later design of the apparatus wherein it will be noted that the small bell is operated by a steam cylinder placed concentric with and above the bell.



Figs. 3 and 4—Same Apparatus as Figs. 1 and 2 Except Supplementary Hopper Revolves in Charging the Blast Furnace

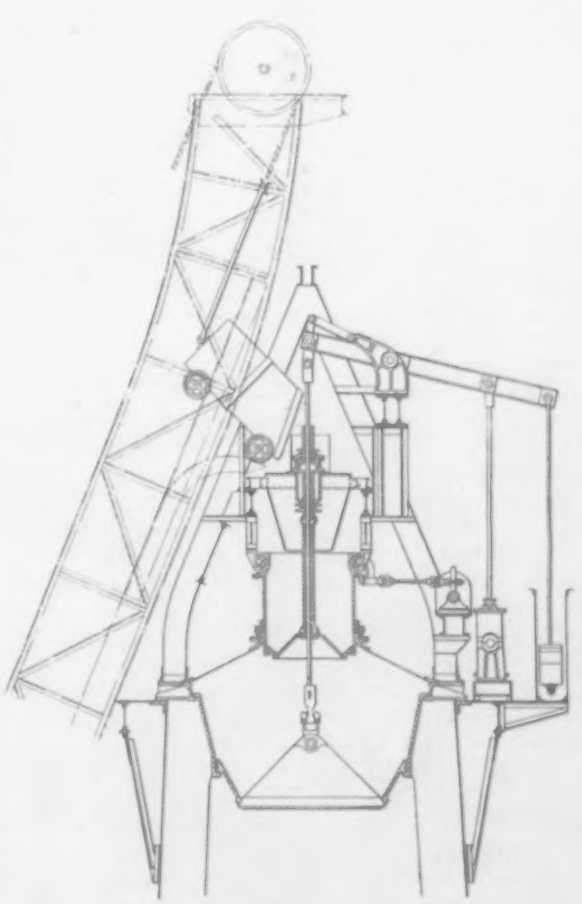
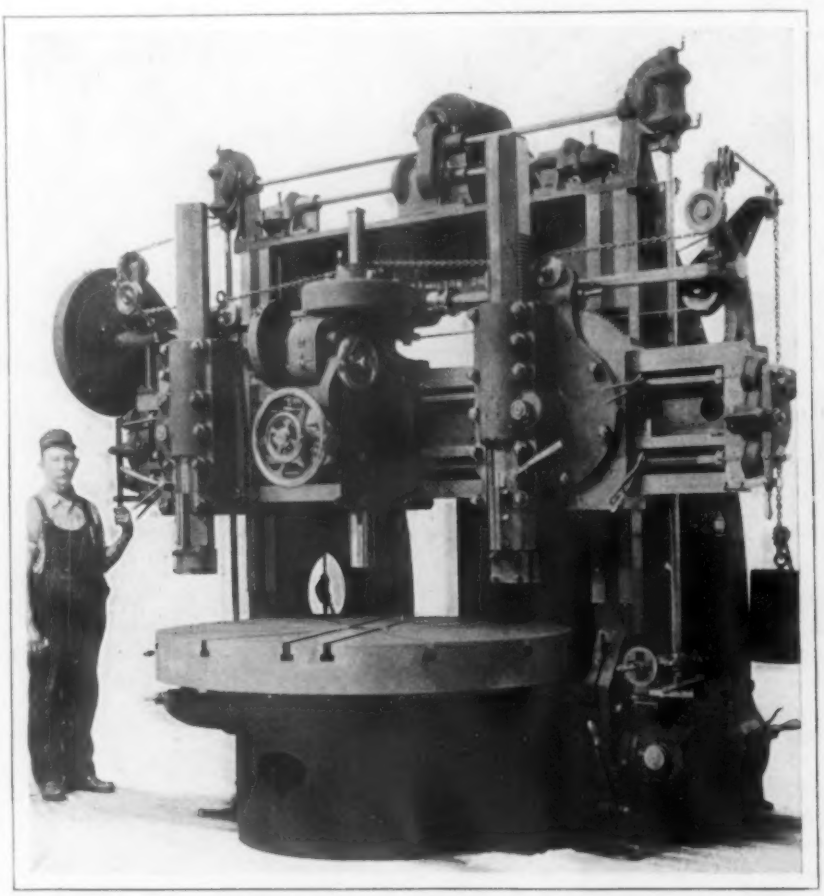


Fig. 5—Later Design in Which the Small Bell is Operated by a Steam Cylinder

CENTER HEAD BORING MILL

A 73-In. Boring and Turning Machine with an Extra Adjustable Head.

The Niles-Bement-Pond Company, 111 Broadway, New York City, recently furnished the Troy Engine & Machine Company, Troy, Pa., with a 73-in. boring and turning mill, equipped with a center boring head. This machine is also built in three other sizes, designated as the 44, 53 and 62 in. sizes. This extra head is located on the rail between the two heads with which machines of this nature are regularly equipped and has a rack and pinion adjustment. If desired, the center head can be traversed to the left and the regular head at the right end of the rail brought to the center to replace it or the same arrangement can be used for the left head. In designing the machine care has been taken to centralize the control as far as possible and to provide protection for the gears and guard against damage to the machine should obstructions be encountered by any of the heads or boring bars.



A 73-In. Boring and Turning Mill Equipped with a Central Boring Head in Addition to the Two Regular Side Heads

The spindle of the central boring head is driven by an adjustable - speed motor, having a range of 3 to 1, mounted on the left end of the cross rail. A pull pin conveniently located on the head provides three positive feeds, and the spindle has rapid traverse by a large handwheel. A clutch on the horizontal driving shaft disengages the drive from the central boring spindle when it is desired to feed the spindle without rotating it, as is sometimes the case when finish boring is done with the table revolving and the center boring spindle stationary. All the changes of feed and their reversal, the rapid power traverse or hand adjustment of the saddles and the bars and the cross rail adjustment and table control are within reach from the operator's position. One lever disengages feed, engages fine and coarse feed and operates the fast power traverse which is provided in either direction for the saddles and bars. Automatic releasing ratchets, located at the sides of the saddles, provide a hand adjustment for the saddles and bars.

The machine is entirely self-contained, no parts extending below the floor line and no special foundation being required. The housings are of the conventional box-girder form with broad faces and double webs. There are no openings in the front face, the cross-rail elevating screws being located between the housings, which are securely bolted to the bed and tied together at the top by a heavy brace. The table is deep and is strongly reinforced by ribbing. It is supported on a large-diameter annular bearing, running in an oil bath, and is driven by a wide-face, coarse-pitch bevel gear. Four pairs of parallel and eight radial T-slots are provided in the surface of the table. The table spindle, which is long and of large diameter, is maintained in alignment by an upper and a lower bearing. The former is bored out of the solid bed and is fitted with an adjustable taper bushing to take up wear, while the latter has a bronze bushing. An adjustable threaded collar on the end of the spindle is relied upon to prevent lifting of the table.

The cross rail is of the three-track type, having a narrow guide at the bottom with the saddle traversing screw located between the guiding surfaces. The section of the cross rail is that of a box girder with a wide face and correspondingly deep. Power adjustment is provided, and the cross rail can be clamped to the housings if desired. The bearings of the saddles on the cross rail are wide, and taper gibs are employed to take up the wear. Each saddle can be locked in place by a clamping bolt when the bar is feeding, and they are swiveled by an arc worm at the top. The bars are octagonal steel forgings with a bearing on four sides, thus enabling wear to be taken up in all directions. Continuous caps are provided for the bars, and a binder bolt is located in the bottom of the cap for locking the bar when the saddle is feeding. The feeds are independent for each head, both in amount and direction for down, cross and angular feeding. They are positive, continuous and reversible and eight changes are provided. Steel forgings are used for the tool holders, and provision is made for boring, turning and facing operations. The holders have straight shanks and are readily removable for the insertion of special boring bars. The counterweights for each bar are attached to the same chain, but act independently. The chain is placed at the rear of the bars to prevent interference from overhead cranes when placing work on or removing it from the table. It is emphasized that this arrangement of counterweights will not pull the swings over nor interfere with the movement of the saddles. To guard

against accidents in case the heads or bars meet with obstruction when feeding or the fast traverse is engaged, safety friction clutches are located on the vertical spline shaft.

The machine can be driven by a direct or alternating current motor or through a belt. When a direct-current motor is used, one having a 4 to 1 speed range is employed, and is carried on a drive plate in the rear between the housings. From the motor power is transmitted through a double run of clutch gears, thus providing two mechanical speed changes, which, in conjunction with the customary minimum of 16 speeds in the controller, provides at least 32 table speeds. The motor is fitted with pushbutton control and a dynamic brake for the table is provided. When alternating-current motor drive is used the power is transmitted from a constant-speed motor through a speed box and back gear located in the rear of the mill, giving 12 speed changes. This box is fitted with a hand-operated friction clutch for starting and stopping the table, and a brake controlled by the same lever at the right side of the mill is provided. A separate motor, located on the top brace of the mill, is furnished for elevating the cross rail and providing rapid power traverse to the bars and saddles. The belt-driven machines are built on the convertible plan and can be readily changed to motor drive, the belt drive being through a single pulley to the speed box and back gear used in connection with the alternating-current motor drive.

Universal Hollow-Hexagon Turret Lathe

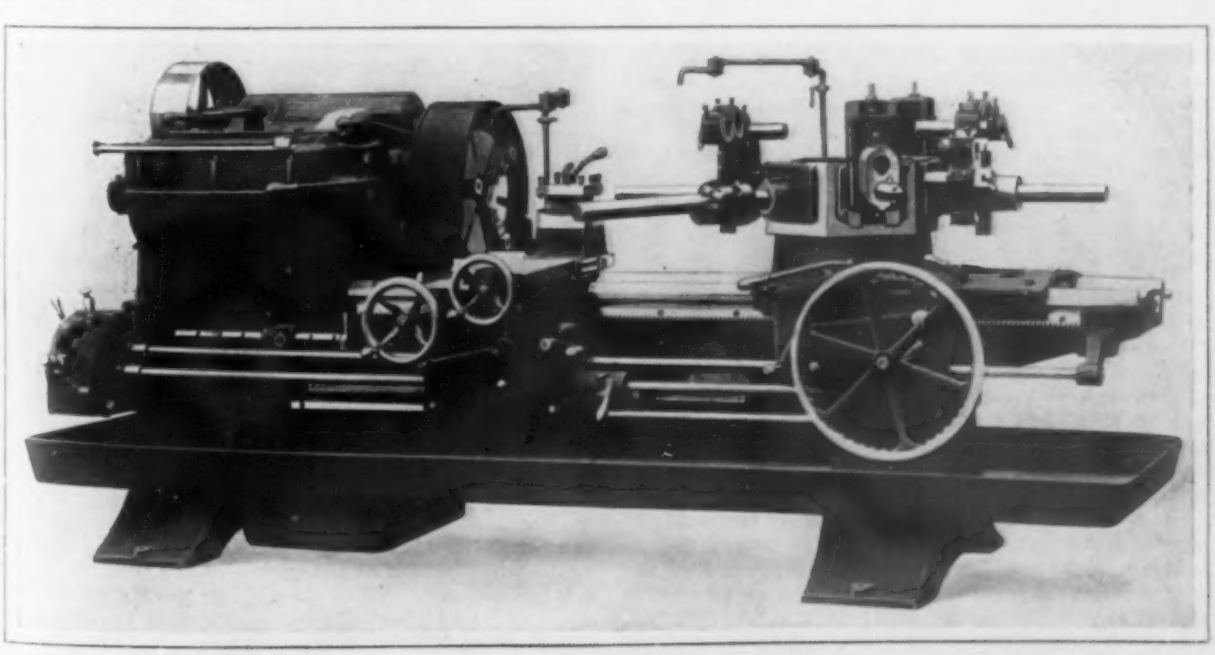
A recent product of the Warner & Swasey Company, Cleveland, Ohio, is an improved type of universal hollow-hexagon turret lathe. The principal change is a new type of headstock, with the gears running in oil. Other changes include an increased working range, increased power of the headstock, an increase in the rigidity and strength of the two tool-carrying units, as well as the use of larger and more rigid tools.

The pan of the machine has been placed low to provide an increased chip space and also to give ready access to those parts of the machine directly over the pan. The legs have been redesigned along the lines of the semi-box type with a wide spread to secure a solid support and secure freedom from vibration. The turret and carriage have simultaneous power operation with the feeds independent of each other. The turnstile operating the turret saddle has been superseded by a large handwheel.

The provision of power operation for the turret and carriage and the making of the feeds independent enable two distinct operations to be performed at the same time; for example, boring with the turret while the carriage is facing or recessing and cutting off. In this way, it is pointed out, as many as 11 tools can be placed in operation with one setup. There are 10 feed changes in each direction for the carriage and the turret, ranging from 0.1 to 0.00459 in. per revolution of the spindle. These changes are controlled by the feed box at the headstock end of the machine. There are 12 spindle speeds, both forward and reverse, which range in approximately geometrical progression from 8 to 250 r.p.m. As in the earlier type of machine, the headstock is cast solid with the bed, which tends to insure strength and rigidity. It is of the single-pulley type and may be belted either directly to the lineshaft or to a constant-speed motor. This headstock, with a 5-in. belt, running on a pulley 16 in. in diameter, is capable of delivering 14 hp. A splash system of continuous lubrication is employed, and this arrangement is relied upon to reduce as far as possible the frictional loss of power in the head.

As far as possible, facilities have been provided to make the machine easy of operation. The power rapid traverse of the turret saddle is relied upon to give quick operation, while the independent adjustable stops for both the turret slide and the carriage reduce the setting-up time. The use of a hollow-hexagon turret permits tools to be bolted from the inside, thus giving the maximum use of each turret face, as well as full support for the tool in direct line of thrust and torsional strains.

The machine is equally adaptable for both bar and chucking work and the automatic chuck will handle round stock up to a maximum diameter of 3½ in., while the length turned has been increased to approximately 40 in. The swing over the cross slide carriage has been increased to 17¼ in. and the maximum swing is 21½ in. Taper turning and screw cutting attachments are furnished when desired. The former handles tapers up to 1½ in. per ft. in length of 15 in. The screw chasing attachment cuts from 2 to 48 threads per in. of any pitch, and this is increased as each leader will cut three pitches that are either one, two or four times its own thread.



A Recently Developed Universal Hollow-Hexagon Turret Lathe Equipped for Chucking Work

SAVING ASSEMBLY COSTS

What May Be Done to Reduce the Amount of Filing and Fitting Required

BY ALBERT A. DOWD

During a casual visit to the assembling department of a large manufacturing plant, a man was noted at a lathe, filing a short jack shaft, which was used in the gear box of one of the machines manufactured by the company. A pile of 10 or 12 other pieces of the same kind was on the floor alongside of the lathe. Being asked what he was doing the machinist said that the shafts were from 0.001 to 0.002 in., too large to enter the holes in the jack shaft gears, so he had to touch them up with a file before he could assemble the parts. Upon examination, it was found that it was not the shafts which were wrong but the reamed holes in the gears.

The chucking department was visited, the reamer calipered and found all right, and the operator said he had used his plug gauge in every piece. The plug was taken to the assembly department where it readily entered some of the holes but could not be forced into some others. Here was a mystery, the solution of which was found to be that the pump which supplied cutting lubricant to the chucking machine got out of order when about half of the gears had been machined so that the remainder were cut "dry," and were warm enough when the plug was tried so that they could hardly be touched by the hand. As a natural consequence the metal was expanded by the heat to such an extent that after they had become cold they were slightly undersize. Had the inspector for this department tested all the gears as he should have done, the error could have been rectified before they were taken from the room. In all probability he tried a half dozen or so which happened to be the first ones machined, and finding them all right, passed the entire lot.

The assembler took the easiest way out of the difficulty, instead of sending the gears back to be reamed over again, and did not even go to the trouble of finding out whether the error was in shaft or gear. The matter was not discovered in the gear-cutting department because an expanding arbor was used. The remedy for a condition of this kind was a more rigid inspection of parts before they reached the assembly department, and an order to report work not up to the standard to the inspector who would see that it was taken care of in the department responsible for the error.

Another man was seen in the assembling department, removing the burr along the edge of a splined shaft, and a note was made of this, so that the operator who splined the shafting did the burring also while the machine was operating on the next piece, so that no loss in time resulted. The same man who was burring the shaft in the assembling room, also had to touch up the keys so they could be set into the shaft. There seemed no good reason why this should be necessary if the spline was properly cut, but an inspection showed the key stock to run a trifle large so that each piece had to be filed a trifle before it could be used. The remedy for this is obvious.

One of the forks which was used to shift the gears in the speed box had to be taken out and filed in nearly every case, because the side of the fork rubbed on one of the other gears when in a certain position. This was found to be due to variations in the forgings caused by their being thrown into a pile while hot, so that some of them had a slight bow which was sufficient to cause the interference. A bending fixture was made to straighten the forks, so that no further filing was necessary when the next lot came along. There seemed to be an excessive amount of chipping on the inside of one of the castings, and an examination showed that in one place there was an interference with one of the sliding gears. A consultation with the patternmaker resulted in a slight change being made in the core box, so that the matter was taken care of in the next lot of castings and no further chipping at this point was needed.

Several other cases were noted which required burring in the assembling department, and these were taken up with the various department foremen responsible for the production of the pieces in question with the result that this work was done without extra cost by the operators who produced the work. A considerable saving in the filing and fitting costs was effected by the various small items mentioned.

In the tool department a number of points were noted which increased the cost of jigs and fixtures. In the first place all jigs and fixtures turned out by this department had the corners carefully rounded with a file, in many cases the toolmaker spending several hours on this kind of work with the very laudable purpose of preventing the operator from cutting or injuring himself on sharp corners. It was found that the pattern shop had received orders not to do very much extra work on jig patterns, so as to keep the cost down as low as possible, so that very little rounding of corners was done on the pattern. It is certainly much cheaper to round a wooden corner than a cast-iron one, and instructions were therefore given to the pattern shop to round all corners slightly when they were in such a position that they required handling. Jig and fixture patterns were looked over by the chief tool designer before sending to the foundry and the corners rounded when necessary. This little matter actually saved the company considerable money in a year.

One man was seen in the toolroom laying out four holes in the base of a fixture, and scribing a circle and prickpunching all around when the holes were simply to be tapped out for jackscrews and no great accuracy was required. As an excuse he said he didn't know how accurate they had to be, and therefore laid them out carefully. Prick punch holes were thereafter marked in red pencil on the tool drawings, so that unnecessary work of this kind was eliminated. Draw filing and polishing bushing plates, clamps, etc., was tabooed because it increased the cost without serving any useful purpose, except in cases where the work was for an outside customer when a little more care was taken so that the general finish would not be criticised.

Several cases were noted of sliding fixtures having taper gibs, in which the gib stock was ordered only ¼ in. or so longer than the work to which it was to be applied. The ordering in department was instructed to order all taper gib stock at least 2 in. longer than the work so that a man could fit it without trouble. It was also observed that the amount of scraping involved on sliding surfaces was often excessive, sometimes requiring a man to spend the greater part of a day on work which might have been done in a couple of hours had the planing been more accurately done. This matter was taken up with the planing department and a noticeable improvement made.

The saving in filing and fitting costs traceable to the items mentioned was found to amount to a considerable sum in both assembling and tool departments, and well repaid the company for the pains taken in locating the causes of the trouble.

Output of Metals for 1914

The production of important metals in the United States for 1914 as compared with 1913 is estimated by the Engineering and Mining Journal as follows:

	1913	1914
Aluminum, lb.	49,601,500	45,000,000
Copper, lb.	1,225,735,834	1,135,730,818
Ferromanganese, gross tons	229,834	172,514
Lead, net tons	433,476	533,373
Nickel, lb.	47,124,330	30,067,064
Zinc, net tons	358,262	360,689

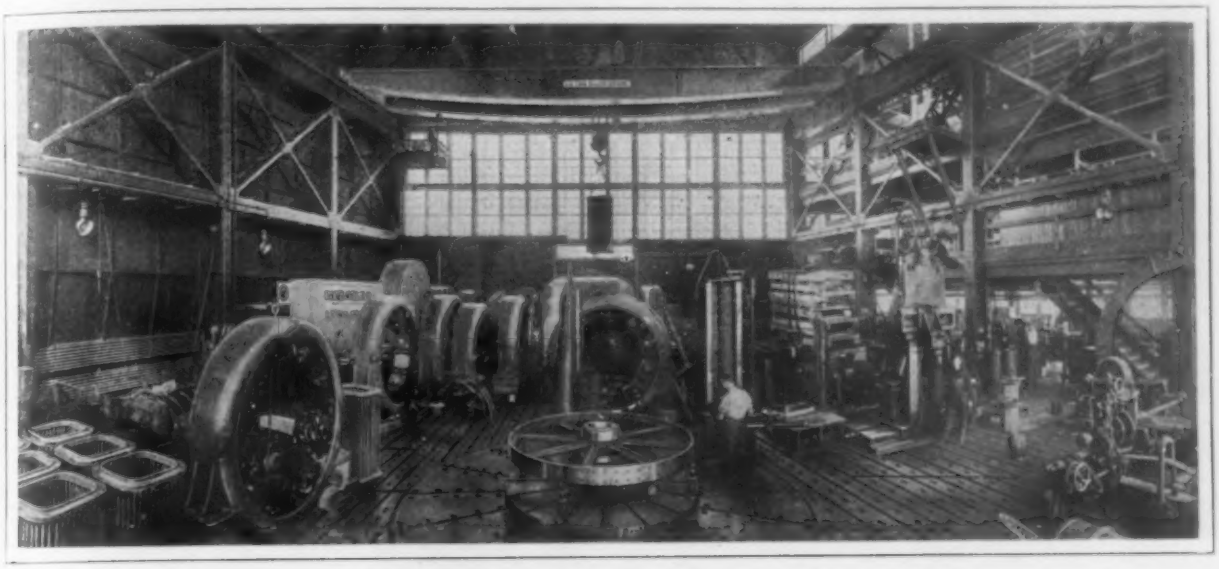
The unsold stocks of spelter in the hands of American smelters at the close of 1914 was 23,500 tons against 64,000 tons at the middle of the year; this was a large decrease—40,500 tons. The world's production of copper was about 913,000 metric tons in 1914 compared with 1,006,000 tons in 1913.

METAL PLATE FLOOR SHOP

A Special Section for Machining Large Pieces of Electrical Apparatus.

BY J. J. TURTELTAUB

The question of machining large electrical machines has been more or less difficult for the manufacturers to handle without much study. To a great extent this problem which has confronted so many capable engineers is now, practically speaking, a matter considered as routine work by the Crocker-Wheeler Company, Ampere, N. J., which is now and has been for the last few years capable of handling the machining of its own machines regardless of size, which, judging from some of the generators turned out, seems to be limitless.



A Portion of a Shop in Which Large Pieces of Electrical Apparatus Are Machined. The Shop Has a Sectional Cast-Iron Floor and in the Foreground Is a Large Boring Table

The Crocker-Wheeler Company now has one of the largest and most completely equipped floor plate shops in the world. The floor plate shop, which was designed and built by the engineers of the company, is equipped with a sectional cast-iron floor 65 ft. long and 47 ft. wide. The sections are imbedded in solid concrete and are true to level. In the center of the shop is a boring table 226 in. in diameter which is level with the floor, making it possible to turn work of considerably larger diameters than the table, which has a central boring bar and an Espen-Lucas boring stand. There is also in this mill a Newton slotting machine with a stroke of 82 in., an Espen-Lucas horizontal drilling machine and a 6-ft. radial drilling machine. A 30-ton Niles electric crane running on overhead tracks and having a span of 60 ft. makes the work of moving the portable machinery and mill work comparatively easy. It is an ordinary thing at this plant to see three or four machines at work simultaneously on one job.

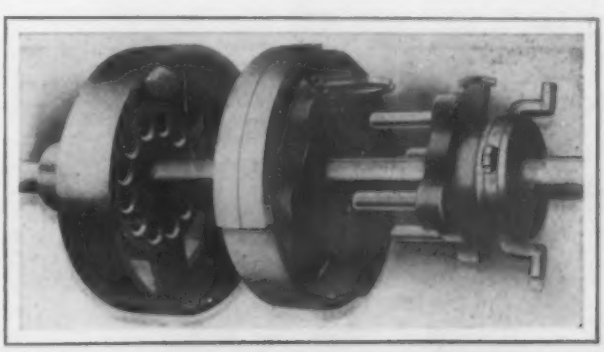
First Steel Works in America

Dr. Carlos E. Godfrey has contributed a most interesting chapter to our colonial iron and steel history. It is published in the Daily State Gazette, Trenton, N. J., of January 1. He quotes freely from old documents and demonstrates that the first steel works in America was established at Trenton by Isaac Harrow on or before September 5, 1734. This pioneer manufactured various kinds of edge tools, making the steel for that purpose. The plant appears to have been in existence as late as 1785.

Combined Friction and Positive Clutch

For use on internal combustion engines, heavy duty machinery, lineshafts, etc., the O. K. Clutch & Machinery Company, Columbia, Pa., has brought out a combined friction and positive clutch, which is the invention of H. Druschel. The advantage claimed for this type of clutch is that the feature of a friction clutch gradually picking up the speed of a driven shaft or pulley under load, together with the positive drive of a jaw clutch, is secured. The clutch can be used either on the friction or positive drive, as desired, the friction being strong enough to carry the load. The frictional contact surface is large, with a simple one-screw adjustment to take care of wear. If the friction block should need to be replaced, this can be done by putting on two new wooden blocks which gives practically a new clutch with but little or no expense for either the labor or the material required.

The clutch is engaged or disengaged by a single movement of the lever, and in engaging or starting a load the friction will gradually start the load until a certain point is reached, when it will slowly release, giving the four steel driving pins a chance to enter a series of holes in the driven part. By this time the friction, which is operated by a double-ended wedge, is entirely released and the pins carry the load positively in practically the same way as a jaw clutch.



View of a Combined Friction and Positive Clutch Showing the Four Steel Driving Pins and Yoke for Shifting and the Double-Ended Wedge for Operating the Expansion Ring

The clutch is made in several sizes, from 20 hp. upward, and is designed for transmitting power at a speed of 100 r.p.m.

NEW NUT TAPPING MACHINE

An Automatic Non-Reversing Type Employing the Bent-Tap Principle

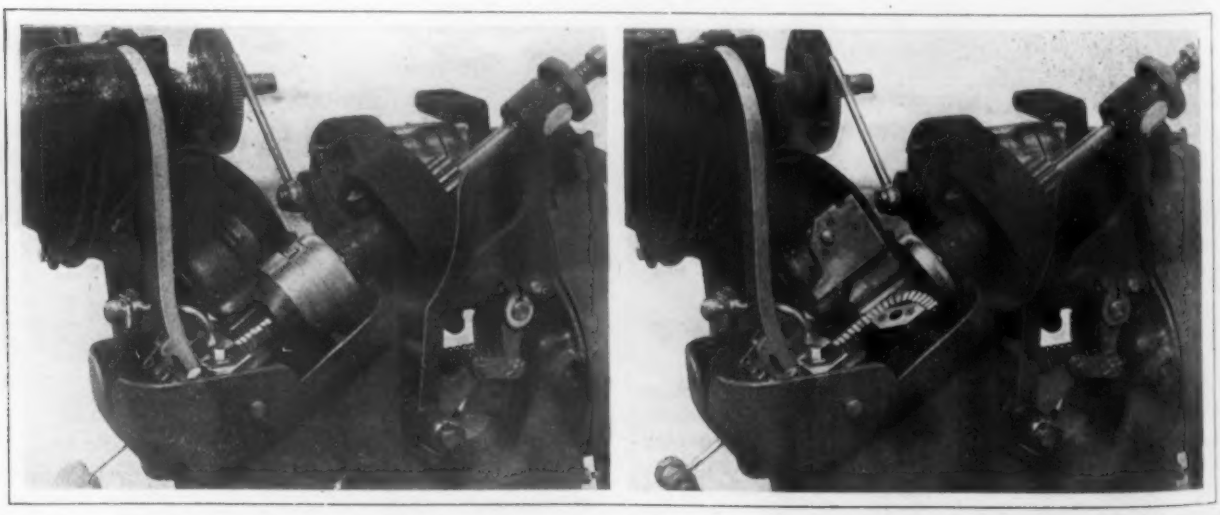
An automatic tapping machine employing the bent-tap principle has been developed by the National Machinery Company, Tiffin, Ohio. These machines are built for handling nuts of ¼, ⅜, ½, and ¾ in. sizes and are of the continuous non-reversing type. The machine is designed primarily for tapping square nuts, but hexagonal ones can also be handled, and each size of machine can be equipped for handling both styles and also several sizes. It is possible by making a simple gear change to vary the number of nuts tapped per minute to suit the character of the stock used. In the ⅜-in. machine, 40 nuts of shop size can be tapped in 1 min. if the stock is free cutting and the holes are of the proper size. If, on the other hand, United States standard nuts are being tapped, a speed of 30 nuts per min. is recommended, as the blanks are thicker and require more turns of the tap per nut. This also applies where the nuts are of tough stock or the holes are smaller than the standard size. No special type or grade of tap, it is emphasized, is needed in this machine, and any standard straight-shank tap that has been successfully employed in a shop will be equally satisfactory in the bent form for the new machine.

The hopper or container for the blanks is located at the upper left corner of the machine and is made larger than usual. On the smaller size of machine it accommodates about 80 lb. of blanks, which gives the operator considerable time between fillings and enables him to attend to a battery of from 6 to 10 machines. A vane type of feed brings the nuts from the hopper to the feed chute, where they are carried by gravity down and into position against the plunger or starter. These vanes, which are four in number, are rotated by a ratchet and pawl located at the right of the hopper. The vanes are inclosed, so that the pressure or weight of the blanks, it is pointed out, cannot interfere with their operation, and the ratchet operating them is held between friction flanges. This arrangement is employed to prevent damage to the machine if scrap or thin nut blanks should tend to wedge in the nut groove and interfere with the vanes, as in such an instance the ratchet would merely slip.

The tap spindle and injector or starter are inclined at an angle, and the blanks come out of the feed chute at a similar one, causing each blank to rest against the starter as it is advanced to the tap. The angle of the starter is relied upon to cause the blanks to be tapped square with the bearing face, and the cutting lubricant employed keeps the face free from chips. The tap spindle has a slight lateral travel, and is counterbalanced, thus giving a variety of floating movement to the spindle. After the starter has fed the blank part way on the tap the spindle descends during the completion of the tapping, thus keeping the blank stationary while it is being tapped instead of pulling it through the nut holder or guides with the likelihood of binding and attendant excessive wear on the nut guides and tap. The course of the nut after being tapped, its travel up the shank and off the end of the tap, due to the forcing of other blanks on the tap, is clearly shown in one of the accompanying illustrations. The hood or cover over the head serves to direct the nuts ejected from the tap into a chute at the right of the bed that conveys them out of the machine into boxes or kegs.

A New Automatic Nut Tapping Machine Employing the Bent-Tap Principle. The Blanks Are Placed in the Hopper at the Upper Left and Are Fed through the Chute in Front. The Ratchet and Pawl at the Right of the Hopper Rotate the Vanes Regulating the Feeding of the Blanks

N. A. Petry Company, Inc., manufacturer of wing nuts and thumb screws of malleable iron, brass and bronze, has moved to 1309 Race street, Philadelphia, Pa.



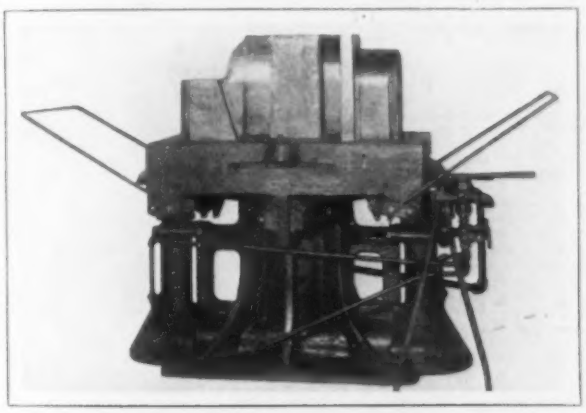
Two Views of the Head or Tap Holder with the Guard Open. In the View at the Left a Nut Is About to Be Ejected from the Head. The Guard Directs the Ejected Nuts Into a Chute Which Conveys Them from the Machine. At the Right the Head Is Opened Showing How the Nuts Pass Over the Tap and Are Eventually Ejected by the Oncoming Blanks, Those on the Shank of the Tap Serving to Support It and Keep It Central

AUTOMATIC MOLDING MACHINE

A New Stripping Plate Jolt Ramming Type for Rapid Mold Production

Practically all of the operations entering into the making of a mold, except the shoveling of sand, are performed automatically by a new molding machine that has been brought out by the Osborn Mfg. Company, Cleveland, Ohio. The machine is intended for the making of molds for journal boxes and work of that general character. Speed in molding is emphasized, secured through the automatic jolting and stripping of the mold, and the drawing of the pattern through the plate is by power, which, it is urged, tends toward accuracy. The machine is intended for use with any of the standard types of stripping plate equipment.

The construction of the jolting mechanism is similar to that of the builder's plain jolting machine, the standard Osborn air cushioned balanced jolt valve being used. One of the particular features of this valve is that it is free from springs, catches and loose parts. The draw cylinders are cast in a single piece and large fitted bolts are employed to connect them to the base of the machine. The cylinders extend below the base and are designed to set inside of pipes 8 in. in diameter, which are inserted in the foundation to receive them. The side of the piston rod, which is also the guide rod, is planed and has teeth cut in it which mesh with pinions cut

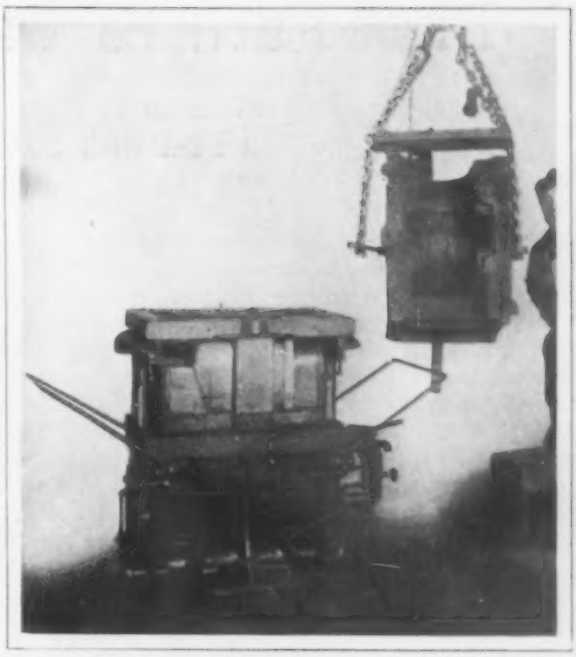


A Recently Developed Stripping Plate Jolt Ramming Molding Machine That Automatically Performs Practically All the Operations Necessary to Make a Mold Except Shoveling the Sand

from the solid shaft extending from one cylinder to the other. This shaft is relied upon to prevent one guide rod from traveling faster than the other and together with the two rods is entirely inclosed and is self-lubricating.

Clamps operated by air are provided to lock the flask and the stripping plate rigidly to the table of the machine although this is not always required. On certain classes of work, it is pointed out that this arrangement is advantageous, and where it is employed a bail, which is made of spring steel to compensate for variations in the hight of flask, swings over the end of the flask. The table and piston are a single piece of cast iron. The standard size of the table can be varied, which, it is pointed out, is sometimes desirable, where the machine is to be used on one particular pattern. The advantage of this arrangement is that when the table is made approximately ⅛ in. less than the size of the flask, the sand does not pile up on the table, and it is thus unnecessary to brush or blow the sand off before returning the stripping plate to position.

In operation, after the flask has been filled and jolted, the air is turned into the draw cylinders,



The Flask and the Pattern Removed from the Machine

which strip the flask and the stripping plate upward from the pattern. After the mold has been lifted away, the valve handle is thrown to the opposite position, thus supplying air above the piston and returning the stripping plate ready for the next mold. This use of air on both sides of the cylinder piston, it is pointed out, is an important feature of the machine, since it is not necessary to wait for the exhaust to escape from below the cylinder and then depend upon gravity for the return. The stripping and lowering actions, it is emphasized, are equally as rapid as when done by hand on an old type of machine.

The following table gives the principal dimensions and specifications of the machine:

Rated stripping capacity, lb.	800
Maximum stripping capacity, lb.	1,000
Maximum jolting capacity, lb.	1,200
Air pressure used, lb.	80
Standard size of table, in.	19⅜ x 32
Diameter of jolting cylinder, in.	6
Diameter of draw cylinders, in.	3½
Pattern draw, in.	14
Center distances of lifting pins, in.	13 x 29½
Hight of table above floor, in.	24

The equipment furnished with the machine includes all the necessary piping, valves, lubricators, etc., and the machine supplied is ready to set on the foundation.

The Vilter Mfg. Company, Milwaukee, Wis., which has been represented by William E. Hexamer for the last 20 years in the East, as general sales manager, has removed its Eastern office and warehouse from 864 North Franklin street, Philadelphia, Pa., to the property located at the southwest corner of Twenty-fifth and Wharton streets, in the same city. It occupies a main building, 200 x 300 ft., and has recently completed a new building for shops, 100 x 100 ft., and a fitting department for carrying small machines, 40 x 80 ft., and now has all departments concentrated. The office is located in a separate building, 30 x 40 ft. The company will continue its New York office at 17 East Twenty-fourth street. It will carry a full line of fittings, supplies and small machines ranging from 1 ton to 25 tons in the Philadelphia warehouse for immediate shipment.

The N. A. Cressman Company, Drexel Building, Philadelphia, has been appointed sole selling agent for the North Penn Washer Company, Hatfield, Pa., which manufactures wrought steel washers and special steel disks.

Blast-Furnace Gas for Coke Ovens

German Tests to Compare Its Use As a Fuel with Coke-Oven Gas for Making Coke Show Gratifying Results

One of the next steps in the promotion of fuel economy in blast-furnace and steel plpants is the use of blast-furnace gas to heat by-product coke ovens. In this way the high value coke-oven gas is set free to be applied in places where the low value blast-furnace gas could not be used. So far this process has not advanced beyond the experimental stage, although it has been talked of for some time. Professor O. Simmersbach of Breslau, who is well known for his work on blast-furnace and coke-oven problems, recently published in Stahl und Eisen a paper on this particular subject, giving the results of work done at the Friedrich Wilhelms Hütte at Mülheim on the Ruhr.

COMPARATIVE TESTS ON KOPPERS OVENS

Two tests were carried out on a Koppers oven 32 ft. 9½ in. long, 8 ft. 6 in. high and 19½ in. average width; the first with the usual coking time, and the second with the shortest possible coking time. The details of the charge are given in Table 1. In both tests coals of almost the same composition were used, and as the coke in both cases was of the same nature, the results are strictly comparable.

Table 1.—Details of the Charges in Comparative Tests.

	Test 1	Test 2
Coal:		
Moisture, per cent	13.10	13.40
Volatile matter, per cent	23.86	23.75
Ash, per cent	6.82	6.38
Oven charge:		
Dry coal, kilograms	7,647	7,620
Water, kilograms	1,153	1,180
Moist coal, kilograms	8,800	8,800
Coke:		
Ash, per cent	9.01	8.76
Volatile matter, per cent	3.72	3.91

The coking time in the first case was 29 hr., although the coke was not pushed until the end of 30 hr. The gas was not burned the last hour. With the second test the time was only 25 hr. Temperature measurements were made each half hour in six different places, the exact locations being shown in a diagram in the original article, and the results given in tables and diagrams. Two of the latter are reproduced. Fig. 1 shows results obtained in the first test. The firm line gives temperatures taken in the middle of the charge, 3 ft. 3½ in. above the bottom of the oven. The dotted line shows those measured in the upper part of the oven above the charge, 4 in. below the roof. Fig. 2 shows similar results obtained in the second test. The average temperature in the heating flue in the first case was 1125 deg. C., and in the second 1173 deg. C.

Corresponding to the difference in these temperatures the charge was heated more slowly and to a less amount in the first case. This is seen first in the evaporation of the moisture of the charge that took 8½ hr. in the first test and 6½ hr. in the second. Further in the first case the temperature of 1000 deg. C. was only reached at the end of 24 hr., but in the second in 21 hr. Also in the first test the highest temperature reached in the charge was 1080 deg. C. after 29 hr., but in the second test this temperature was obtained in less than 23 hr., and the highest reached was 1150 deg. C. in 25 hr. The temperatures in the gas space above the charge show similar conditions. The critical temperature for ammonia decomposition of 900 deg. C. was first reached in test No. 1 in 22 hr., while in the second test in 16 hr. In the first test it only remained 7 hr. above this temperature, but in the second 9 hr., a condition deserving serious consideration. The average temperature of the preheated blast-furnace gas in the first test was 1022 deg. C., varying from 990 to 1070 deg. That of the air was 1044 deg. C., varying from 1010 to 1090 deg. With the second test the average temperature in the gas regenerator was 922 deg. C., and in the air chamber 966 deg. The waste gas temperature in both tests increased about the same amount during the coking time, in the first test from 240 to 280 deg., and in the second from 310 to 360 deg.

COMPARISON OF BLAST-FURNACE AND COKE-OVEN GAS

If these results are compared with those previously obtained when heating with coke-oven gas it is found that the temperature of the charge is considerably higher, at a given period of the coking

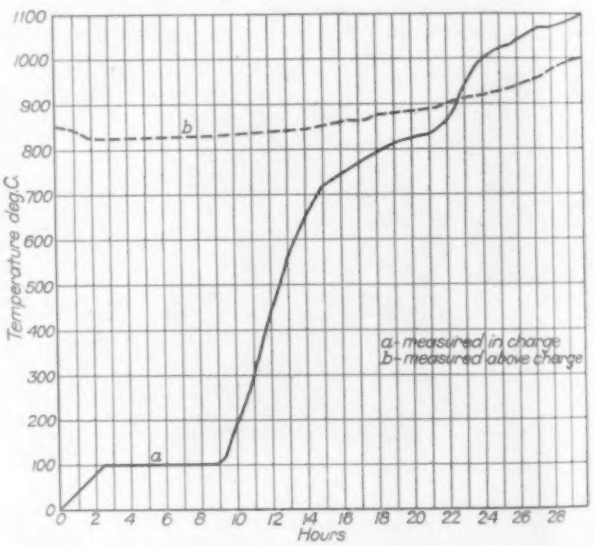


Fig. 1—Temperatures in Coke Ovens with Test No. 2

time, when using blast-furnace gas. This is shown in Table 2, where test No. 1 is taken for comparison.

Table 2. Temperatures of the Charge.

Heating with	Coke-oven gas		Blast-furnace gas	
Beginning of water evaporation in the center in 100 deg. C.	End of third hour	With 12.1 per cent water	Beginning of third hour	With 13.1 per cent water
End of water evaporation	End of thirteenth hour		Beginning of ninth hour	
	TEMPERATURES, DEG. C.			
13th hour	100		570	
14th hour	130		650	
16th hour	200		750	
20th hour	430		820	
22d hour	720		900	
24th hour	950		1000	
26th hour	980		1050	
28th hour	1050		1080	

Toward the end the temperatures come together because then less heat is used for the distillation

than for radiation, and the oven taking blast-furnace gas, with its average top temperature 150 deg. higher, is at a disadvantage. Calculation shows that blast-furnace gas gives 44 per cent. more products of combustion at the same temperature than coke-oven gas, using the analyses of the gases in the tests, which with the same heating surface will give better heat transfer. Also the composition of the products of combustion and the specific heat of the constituents, show that at 1100 deg. C. the heat contents of 1 cu. m. from blast-furnace gas are 497.1 cal., and from coke-oven gas 477.1 cal. This combines with the greater volume of the products of combustion to give better heat transfer from the gases to the furnace walls.

Theoretical considerations are also given, that need not be gone into in detail here, to show that hot blast-furnace gas and heated air mix more readily than coke-oven gas and air, and also give a longer flame more uniform in heating value. This gives the possibility of building coke ovens still higher, without special arrangements such as heating from the top, and also insures better and more uniform heating of the coke-oven walls.

COMPARATIVE HEAT BALANCES

The heat balances of the two tests are then worked out carefully in detail, the final results being

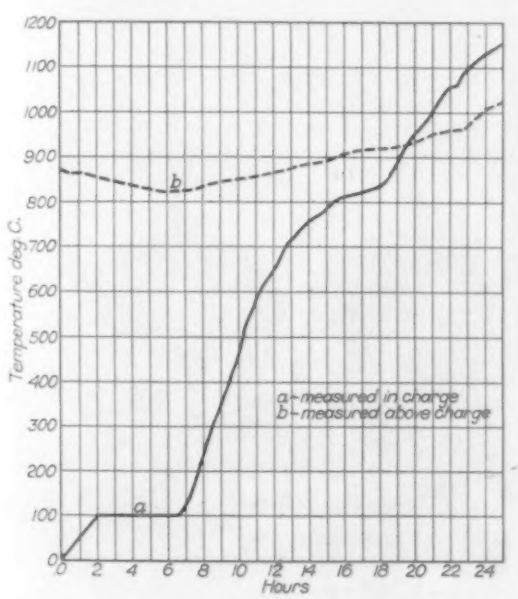


Fig. 2—Temperatures in Coke Ovens with Test No. 2

given below in Tables 3 and 4.

Table 3.— Heat Balances in Test No. 1.

Per 1 Kg. of Dry Coal.

Incoming	Calories	Outgoing	Calories
1. Heat value in the gas.	763.6	1. In the coke	342.8
2. Heating of the gas to 9.5 deg.	2.6	2. In the steam	147.8
3. Air for combustion at 120 deg.	26.4	3. In the waste gases	160.0
		4. Gasifying and heating tar and gas	43.1
		5. Radiation and work of coking	98.9
	792.6		792.6

If 160 calories are taken from this total, being the heat carried off by the waste gases, then 632.6 calories are left which are transmitted to the coal for use. If this amount is made equal to 100 the heat distribution is

	Per cent.
In the coke	54.22
In the steam	23.38
In the gas	5.81
In the tar	1.01
Distillation and radiation	15.58
	100.00

Similar results for test No. 2 are given in Table 4.

Table 4.—Heat Balances in Test No. 2.

Per 1 Kg. of Dry Coal.

Incoming	Calories	Outgoing	Calories
1. Heat value in the gas.	729.9	1. In the coke	368.7
2. Heating the gas to 11 deg. C.	2.9	2. In the steam	152.1
3. Air for combustion at 120 deg.	22.7	3. In the waste gases	148.9
		4. Gasifying and heating tar and gas	47.3
		5. Radiation and work of coking	38.5
	755.5		755.5

When worked out as before the heat distribution is:

	Per cent
In the coke	60.78
In the steam	25.07
In the gas	6.76
In the tar	1.04
In the distillation and radiation	6.35
	100.00

Based on these results, Professor Simmersbach estimates that, at the present condition of coke-oven technology, if blast-furnace gas is used, each kilogram of dry coal needs about 750 to 775 cal., based on a heating value of blast-furnace gas of about 900 cal. per cu. m. (101 B.t.u. per cu. ft.). In designing this should be taken as the lowest amount necessary. G. B. W.

Electric and Combustion Furnaces Compared

A comparison of electric and combustion furnaces for metallurgical work is given by Dorsey A. Lyon and Joseph F. Cullen in the following terse summary:

In the combustion furnace, no matter what form of fuel is used, the temperature cannot exceed 2000 deg. C.

In the combustion furnace the efficiency varies from 2 per cent. to 60 per cent., whereas in the electric furnace it averages about 60 per cent.

In the combustion furnace not only is it necessary to take care of the products of combustion, but these products may reduce the efficiency of the process, whereas the electric furnace is free from these difficulties.

In the electric furnace the temperature attainable is the same, whether the furnace is operated on a commercial or a laboratory scale.

In the electric furnace the heat may be developed at any desired point, and by passing the current through the substance that is to be treated, the heat necessary for the operation may be developed within the substance itself.

The temperature of an electric furnace is under absolute control.

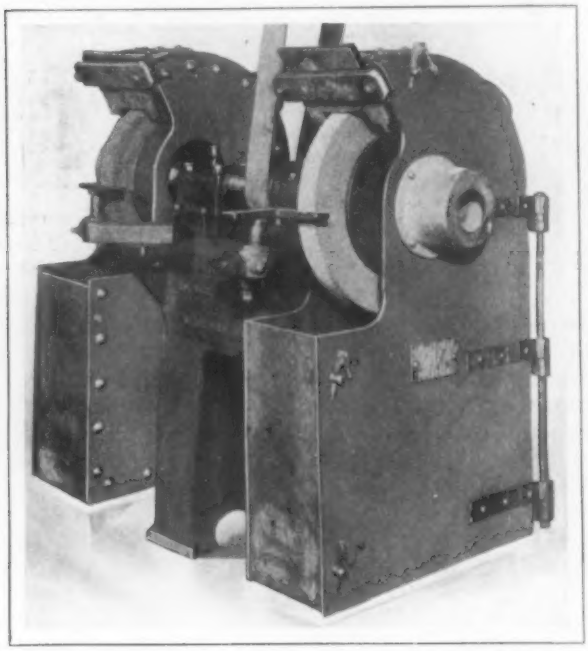
Any atmosphere desired, neutral, oxidizing or reducing, may be obtained within the electric furnace. This feature, together with the fact that the product is generally much purer than that of the combustion furnace, is a great factor in favor of the electric furnace.

New Potash Bulb for Carbon Determinations

George P. Vanier, chief chemist of the Pennsylvania Steel Company, Steelton, Pa., has been awarded a certificate of merit by the Franklin Institute, Philadelphia, Pa., for his potash bulb. This bulb has been particularly designed for use in the determination in industrial laboratories of the total carbon in iron or steel. In such laboratories time is often a very important factor. The bulb is of large capacity, and by the provision of a glass spiral in which the gases of combustion of the sample under test and the potash solution circulate together, a high rate of absorption of carbonic acid is obtained. With the bulb is combined a drying tube. Mr. Vanier has also designed zinc tubes and sulphuric acid bulbs for use in connection with the Vanier combustion train for the determination of carbon in steel by the direct combustion method with the electric furnace.

A New Safety Hood for Emery Wheels

The Pittsburgh Emery Wheel Company, Rochester, Pa., has put on the market a new design of safety hood for emery wheels, which, it is stated, meets all the requirements of the Pennsylvania De-



A New Design of Safety Hood for Emery Wheels in Which Heavy Steel Plate Is Extensively Used and the Wheel Is Almost Entirely Encircled by an 8-In. Steel Channel

partment of Labor and Industry. The opening for the dust exhaust is located at an angle of about 35 deg. above the horizontal center line in the rear.

These hoods are made with a continuous 8-in. channel from a point where the adjustable front plate is located on the upper part of the wheel clear around the back under the bottom and up the front. This is in one piece and makes the hood very rigid. The side plates are ¼ in. thick. The outside plate has three strong hinges, so that it can be opened the same as a door to permit the removal of wheels and the replacing of new ones, the door being locked by keys.

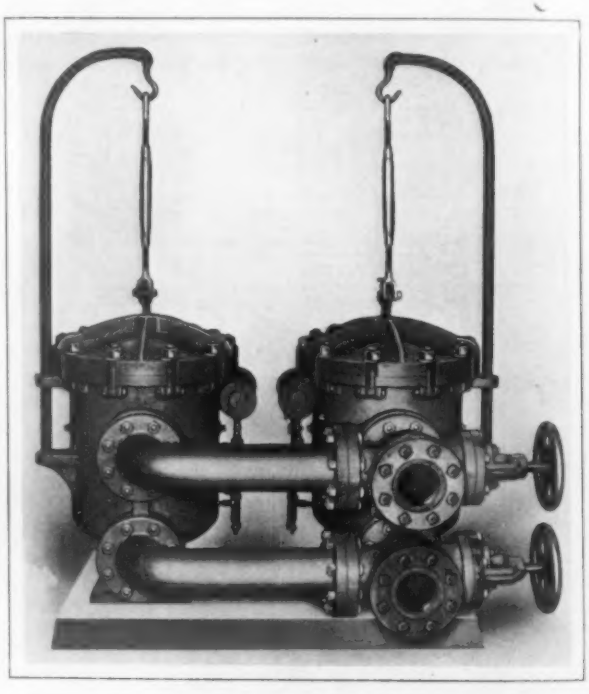
There is a cast-iron cup mounted on these hoods to protect the ends of the spindle and nut, which prevents the possibility of a man being caught and injured. The front plate, which is adjustable, is of steel ½ in thick and may be set at any angle to conform to the nature of the work to be ground. This plate is held by a strip of steel ½ in. thick, substantially bolted to a steel casting that in turn is riveted to the top of the encircling steel channel, and these hoods in conjunction with the taper flanges, or safety collars, having a ¾-in. per ft. taper, are practical and fool-proof. This front adjustable plate is set so as to allow about 1 in. between the wheel and the plate, so that should a wheel break and the parts open on the collars or flanges, they will not strike the plate, as the wheel very seldom opens more than ½ in. before the machine is stopped.

These hoods are constructed so that there is plenty of room beneath the wheel where the metal and heavy particles of emery may accumulate, and the dust is taken away above the horizontal center line in the rear sufficiently high to permit nearly all the heavy particles to drop and only the dust to be taken though the exhaust system, as experience shows that the taking of the heavy particles through the exhaust system and fan cuts the system to pieces in a short time, and it is very easy to have this heavy material removed in a wheelbarrow. The outside door of the hoods may be quickly opened, either for changing the flanges or collars, or the wheel, or to remove the accumulated material in the hood. The exhaust openings in the back of these hoods are all made of the diameter required by the Department of Labor and Industry, not only of Pennsylvania, but New Jersey and New York, and which will probably be the standard in all manufacturing states.

A Twin Grease Extractor for Feed Water

James Beggs & Co., 36 Warren street, New York City, have brought out a type of Blackburn-Smith feed water filter and grease extractor, having twin bodies controlled by a single inlet and outlet valve. It is designed so that one part of the filter may be put out of service for cleaning while the other carries the regular load, and both sides are available for the peak load. In this way, it is emphasized, the thorough filtration of the water is secured at all times.

The filter chests are the same as in the indi-



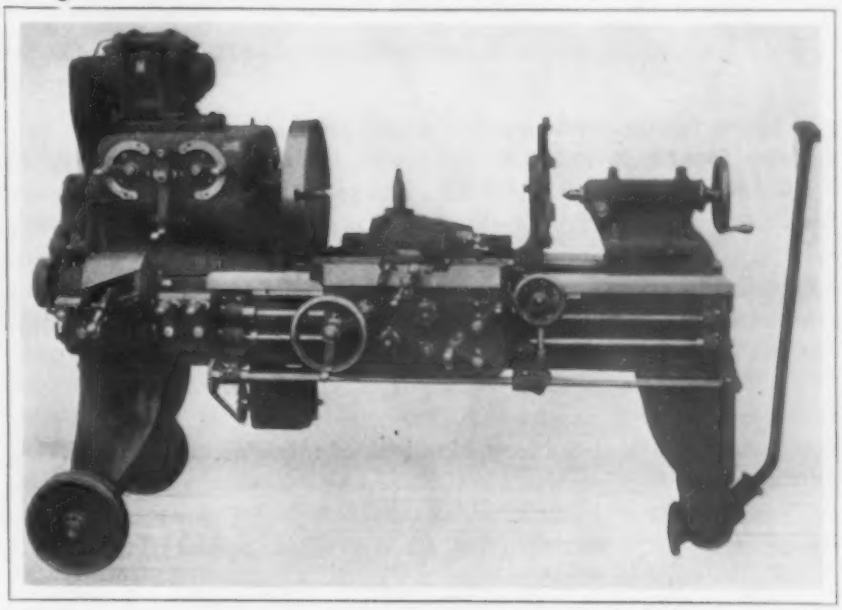
A Recently Developed Twin Feed Water Filter or Grease Extractor. The Position of the Handwheels at the Right Determines Which Filter Shall Be in Service at Any One Time, Thus Providing for Cleaning During Periods of Light Load Without Interrupting the Continuity of Filtration

vidual type of this company, each being divided into an inlet and outlet chamber by a partition carrying the filtering cartridges. The turning of both of the valves to one limit by-passes one of the bodies, while the other is by-passed by turning both valves to the other limit. Alternate operation and cleaning of either side is thus permitted, and the combined operation of both sides, as for example, during the peak load, is accomplished by turning the valve to the middle position. The valves are of the double-seat type, and the disk working between them is self-seating. The opening of the filter is facilitated by the use of a large cover held in place by swing bolts, the crane and turnbuckle shown lifting, swinging and holding the cover during the cleaning operation. The filtering cartridges consist of two concentric perforated brass cylinders, covered with linen cloth, so that two uniform separated and successive filtering surfaces are placed in the path of the entering water.

A Portable Lathe for Railroad Shops

The American Tool Works Company, Cincinnati, Ohio, has recently built a portable lathe for a large railroad shop. It is intended for use in railroad and large machine shops, where it is more economical to take the machine to the work instead of taking the work to the machine.

The lathe is a standard tool with the exception that it is mounted on three wheels and has a long lever for hauling about the shop. This arrangement, it is pointed out, gives a tool which is ready for service in any part of the shop at practically a moment's notice. It consists of the builder's regular 16-in. high-duty type with a patented motor-driven geared head arranged for eight speed changes. The use of the three wheels provides a three-point bearing on the floor, which is generally employed for tools of this character, as the chances of a machine so mounted getting out of alignment are slight, even though the floor is not perfectly level. The other equipment of the lathe includes change gear mechanism, a double plate all steel geared apron, a chilled bed, a heavy tailstock which is held in place by four bolts and bronze bearings throughout.

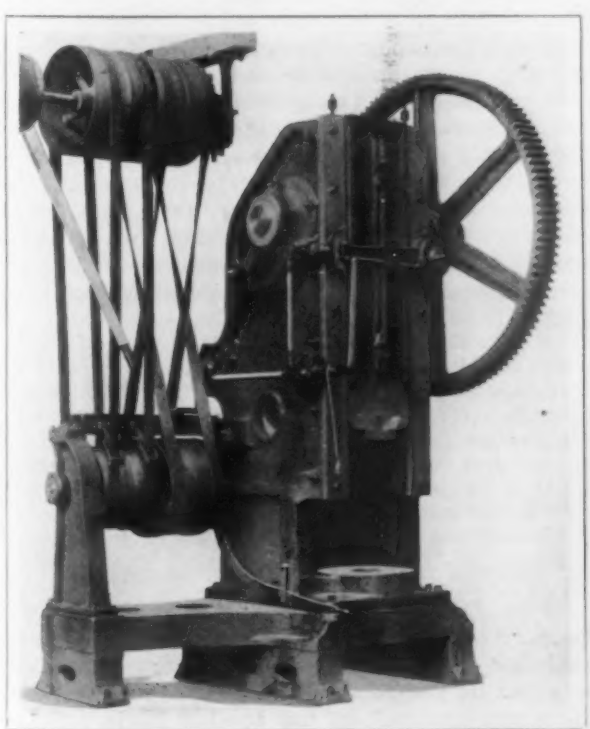


A Portable Lathe Recently Developed for Use in Railroad and Machine Shops Where It is Desired to Take the Tool to the Work Instead of the Work to the Tool

A Long Stroke Heavy Drawing Press

To provide a long stroke heavy drawing press of high capacity the Waterbury Farrel Foundry & Machine Company, Waterbury, Conn., has brought out a press of the rack and pinion type. It is designed for drawing long shells of brass, such as are used for field gun cartridge cases, thermos bottles, tire pumps, plumbers' supplies, etc.

The machine has a shifting belt drive and is driven by double belts which insure against accidents from overrunning the gate if the belt should break. The stroke of the gate is adjustable from a maximum of 48 in. down to approximately 12 in., this variation being accomplished by adjusting the dogs on the front of the gate. These automatically shift the belts on each end of the stroke, according to the well-known shifting belt principle employed on many makes of planing machines. The handle at the left enables the operator to reverse the gate or stop it at will.



A New Long Stroke Heavy Drawing Press of the Rack and Pinion Type with Shifting Belt Drive Designed for Manufacturing Field Gun Cartridge Cases and Other Long Brass Shells

There are three speed changes, high, intermediate and low, obtained through change gearing. At the maximum speed the gate has a drawing speed of approximately 20 ft. per min. and a return speed that is about 5 ft. greater. The slowest feed gives a drawing stroke of 10 ft. and the return stroke is 25 per cent. greater. The capacity of the machine at the highest speed is 20 tons, and at the intermediate or slow speed it will pull to the rated capacity of 30 tons.

The following table gives the principal dimensions and specifications of the machine:

Working pressure, lb.	60,000
Maximum stroke, in.	48
Minimum stroke, in.	12
Over-all hight of machine with gate at highest point, in.	170
Total depth of machine, in.	90
Total width of machine, in.	105
Weight, lb.	27,500

The equipment furnished with the machine includes an overhead countershaft and the necessary guards for protecting the gears.

Horizontal Inclosed-Impeller Centrifugal Pump

A horizontal single-stage single-suction inclosed-impeller centrifugal pump has been developed by the Goulds Mfg. Company, Seneca Falls, N. Y. It is designed for higher speeds than the pump formerly built, and is intended for direct connection to electric motors operating with direct current or alternating current at frequencies of 25, 50 and 60 cycles. The casing is of the volute type and can be swiveled to any one of eight different positions, thus dispensing with a discharge elbow and saving space where the room available for pipe fittings is limited. The impeller is of the inclosed type and is hydraulically balanced against end thrust.

Export Movement Set Forward at St. Louis

A Notable Convention at Which the Foreign Trade Problems of the Smaller Manufacturer Were Given Prominence

The foreign trade movement was given a distinct impetus by the convention held at St. Louis, January 21 and 22, called by the National Foreign Trade Council. As at the first convention held in Washington in May, 1914, the iron and steel and machinery trades were represented in an important way. President Farrell of the Steel Corporation is the chairman of the Council, and several of its members are heads of important steel-making, machinery and metal-working companies. Upward of 300 delegates were in attendance at St. Louis representing manufacturing, exporting, banking and transportation interests, and in many cases boards of trade and other commercial organizations in various sections of the country.

The makers of the programme wisely decided to give prominence to the problems of the smaller manufacturer and merchant in the development of foreign trade. This naturally brought up the question of the legality of combinations of manufacturers for foreign trade extension. The discussion on this latter question was most interesting. The convention also got deeper into the merchant marine problem than it probably intended. Secretary of Commerce Redfield was on the programme to speak on the work of his department, but made a second appearance before the convention to defend the administration's vessel-purchase policy.

It is safe to say that the delegates to St. Louis have attended few conventions from which they obtained as much practical information. All had read the equal of volumes on export trade problems, but in this convention they got direct from men who had specialized on the subject, the answers to questions that have been uppermost in such discussions since the outbreak of war in Europe.

There were no resolutions. The Council, at a meeting lasting far into the night before the convention opened, decided that information and discussion and right direction of the thought of those in attendance were the things to be aimed at rather than the passing of resolutions. Convention resolutions are often none too well considered, and many times represent the opinions of the few, perfunctorily acquiesced in by the majority. The Foreign Trade Council is non-partisan and non-political and aims at things on which business men can unite rather than those on which they may disagree.

May Manufacturers Combine for Export Trade?

An important subject discussed and one that brought out opposite views was whether American manufacturers can combine in carrying on export trade to the extent of fixing prices on such sales and adopting measures to exert their combined strength in meeting foreign competition in outside markets. W. L. Saunders, chairman of the Ingersoll-Rand Company, New York, read a paper on "Government Regulation of Commerce as Affecting Foreign Trade," in which he took the position, "based on legal advice from those who have studied this subject and are most competent to interpret the situation," that "there is nothing in the Sherman law that prohibits price fixing, pools and trade combinations of American producers in selling goods for delivery into foreign countries," and that the term "foreign commerce" in the Sherman act "is evidently intended to apply to importations and not exportations." For example, "Two men located in Italy to promote the sale of American-made tools have a perfect right to get together and fix prices and terms so long as they do not violate the laws of the country in which they are doing business."

Mr. Saunders said that in all the suits brought by the Government under the anti-trust act there is no instance of prosecution because of conditions involving export trade, nor are any such suits likely to be brought. He explained the workings of the German cartel system of bounties and premiums for exports and told how German manufacturers secured freight rebates on goods delivered at the seaboard for export. He referred to the Steel Corporation as an illustration of the effect of combination in extending foreign trade, its trade abroad having increased in ten years from $10,000,000 to $90,000,000 a year. He did not favor sending an agent to a foreign country as a representative of several different lines, believing that such a man in his effort to cover several lines does full justice to none. A strong organization must be maintained and a large volume of business done. In conclusion he said:

> We do about twenty thousand millions of dollars worth of business in manufactured products in our home trade and only about one thousand millions in foreign countries. Of all our manufactured exports about one-third is represented by mineral oil, iron and steel and agricultural machinery, thus indicating that export trade in American manufactured products is the most fertile and encouraging field which is now open for cultivation and expansion.

COPPER TRADE NEEDS POWER TO COMBINE

John D. Ryan, president of the Amalgamated Copper Company, took issue with Mr. Saunders and said that with the Sherman act in its present form it would be unsafe for American manufacturers to form combinations in the foreign trade. He referred to the experience of the copper producers of this country in selling in foreign markets. The German buyers of copper, for example, had com-

bined to force down the price and persisted in staying out of the market at times, meanwhile working their stocks down to the last pound, so as to force a concession from some American seller. Since the American producers could not combine on a price, the foreign buyers were able to buy cheaply by waiting until some one of the producers was forced by necessity to sell at a sacrifice. The speaker believed that it should be possible for American manufacturers to combine in handling foreign trade, but he had been informed by a former attorney-general that such agreements would be held in violation of the Sherman act. Another attorney-general, he said, had taken the opposite view, but this left the question a mooted one, and until there was proper legislation he did not consider it safe to attempt concerted effort in foreign markets.

D. E. Skinner, of the Port Blakeley Mill Company, Port Blakeley, Wash., said that after many conferences at Washington and careful investigation, in the course of which he had received a letter from an attorney-general (Wickersham), he and others engaged in the lumber business in the State of Washington had decided to go ahead with the formation of a company in which all were represented, for the carrying on of their export trade. Mr. Wickersham had said that the Sherman act would not apply to a co-operative movement for carrying on export trade. [Mr. Ryan here interpolated, and in so doing produced a laugh, saying that Mr. Wickersham was the attorney-general who had told him that manufacturers who combined in foreign trade were in danger of prosecution under the Sherman act.]

GROUP DISCUSSION

In the group meeting of Thursday afternoon, devoted to Government regulation of commerce as affecting foreign trade, Mr. Skinner indicated further what had been done by himself and associates to get authoritative opinion on this important phase of the movement for foreign trade extension. It had been the expectation that some qualifying section would be inserted in the Clayton act, but this had not been done. Many senators and others with whom he had discussed the matter at Washington took the view that co-operation and even combination by manufacturers in connection with foreign trade was not prohibited by the Sherman act. In the State of Washington 1000 idle men could be set at work in the lumber trade under the co-operative plan about to be put into effect.

Mr. Ryan, Mr. Saunders, W. S. Horner of Goff, Horner & Co., Pittsburgh, and others, participated in the discussion at the group meeting. Mr. Saunders agreed with Mr. Skinner that the organization of a selling company for the purpose of securing export business would be entirely within the law, provided, of course, that the operation of such a company did not restrain or limit trade in the United States and did not create unfair competition. The limits of co-operation in this respect could be well determined by the Foreign Trade Commission.

EX-GOV. FRANCIS HOLDS CO-OPERATION IN EXPORTS IS LAWFUL

It was a surprise to many who sat in the convention to hear the confident expressions by some of the speakers as to the legality of co-operation by manufacturers in the foreign trade. At the banquet on Thursday evening Alba B. Johnson, the toastmaster, brought up the question of selling in foreign countries at a lower price than prevailed at home. He asked whether public opinion in the United States had arrived at the point where it approved of American business men making lower export prices for their products than those made at home. He also asked whether the Interstate Commerce Commission would eventually authorize low combination rates by domestic railroads and the steamship lines so that the rail haul on export business would be at a considerably less rate than was charged for domestic business. He considered the answer to these questions vitally important.

Ex-Governor Francis of Missouri, who spoke later in the evening, said that while he was a Democrat and Mr. Johnson was a Republican, he was free to say that the American manufacturer would be allowed to compete in the markets of the world with the foreign manufacturer, making such prices as were necessary to get the business. He also wanted to say as a member of the party in power that it would be possible to make such through rates as were necessary to obtain business in foreign markets. He said also that for manufacturers to combine to further export trade was not contrary to the anti-trust laws. These positive declarations on mooted questions coming from such a source and given as though representing administration sentiment, caused no little comment among Governor Francis's hearers. They raised the question in a good many minds whether sentiment is actually growing at Washington in favor of removing the trammels that now limit manufacturers who would increase their foreign trade.

Governor Francis told of an interview some years ago with the head of the Deutsche Bank, in which the former, after avowing his opposition to protection, gave as a reason the fact that some American manufacturers were selling their products in Germany at lower prices than they were asking at home. To which his German friend replied, "Why, that is what we have done in our foreign trade for years and are doing yet."

A Sharp Passage on Merchant Marine

A political turn was given the proceedings by the discussion of Friday morning on an American merchant marine. The paper of James J. Hill, read by J. Louis Schaefer, of W. R. Grace & Co., New York, in Mr. Hill's absence, took the position that to buy an American merchant marine by big subsidies would be a losing game. "There are but two resources," the writer held—"one a merchant marine owned and operated by the Government, and the other a merchant marine operated by and for the people." In referring to the former, Mr. Hill made statements that called out a heated reply from Secretary Redfield in his second appearance before the convention.

Mr. Hill said of government ownership: "Aside from the complications almost certain to drag us sooner or later into the European conflict, owing to the uncertain and conflicting claims of national neutrality, this policy would be followed by the total destruction of the private shipping interest. Private enterprise cannot possibly compete with the Government which pays no interest on the cost of its ship, and throws aside considerations of profit and loss." Referring to the Panama Railway as an ex-

ample of Government operation, Mr. Hill said that its freight rate in the year 1913 was 3.48 cents per ton per mile as against 0.7268 cents for all the railroads in the United States; that is, the Government rate was almost five times the rate made by private enterprise over the entire country and yet, aside from the higher cost of coal, the Panama line presented few if any more difficulties in operation than other managements have to overcome. He believed that the only method of restoring the American merchant marine was by private initiative. "The American merchant marine needs just one thing, but that it must have if it is to revive. Put it on an exact equality with the other shipping systems of the world. Let the American citizen be authorized to procure and operate vessels on the same terms as the citizen of any other country is under its laws, and his ability and enterprise will do the rest."

Secretary Redfield's Reply

Secretary Redfield in replying was under evident stress. Among other things, he said:

Why have we here in America so much the habit of criticising first and getting the facts afterward? Why has not somebody come and asked me a single question as to the truth in these matters before body after body has published statements which are full of dreams? It has been advertised all over the country that there would be trouble if the Government bought German ships. I have here an offer to sell the Government twelve English ships available immediately. Did anybody raise the question that there will be international complications if we bought these English ships? We have had offers to sell to the Government French ships available immediately. Has anybody raised the question of international complications if we buy these French ships? I gave to a merchant in Louisville yesterday a letter from the British ambassador saying there was no objection to his purchasing a German ship to be used in South American trade.

Secretary Redfield went on at length to answer statements made concerning the earnings of the Panama Steamship Company, and contradicted published statements that the company did not charge off depreciation and make proper allowance for interest on capital cost. He took up the question of the cost of American built vessels, and gave as the chief reason why it was high the fact that here one vessel at a time is built, whereas abroad, with construction standardized, a number of ships of the same size and design are built at one time. He cited the low freight rate on vessels on the Great Lakes, and said that the lowest rate for bulk freight to be had anywhere is in an American steamer operated by men paid American wages, with an American captain and other officers, and a steamer that lies idle five months in the year.

The Secretary referred to what he called extortionate freight rates now asked by vessel owners. He quoted from letters written by shippers complaining of an increase in shipping rates of 50 to 500 per cent. Many shippers complained that they could not move their goods at any rates, the vessel companies refusing to receive them.

The Secretary told of calls upon him by men who asked that the plan for Government purchase of ships be held up, but instead they had no plan for preventing extortion in shipping rates—"that extortion that is closing American factories, is causing the cabling to stop orders and is hindering our commerce for the benefit of foreign stockholders in certain European steamship companies at a time when we have before us the biggest opportunity in our history.

"But I want you to know this, that if private capital will do the work that American commerce needs to be done, at a reasonable rate, taking into account the unusual conditions of the case, there will be one thing said, and that is, 'God bless you.' And we will keep hands off.

"I am getting tired of being told that there are ships enough in the South American trade. I am a little weary of the heavy travel we always speak of from the United States to the south. But how about the trade from the south to the United States?"

Government Purchase Cannot Remedy the Present Congestion

Welding Ring, of Mailler & Quereau, New York, was on the programme with a paper on "An American Merchant Marine." He followed Secretary Redfield, and in his remarks cut loose from his paper to answer the Secretary's advocacy of Government purchases of ships. He said:

I venture the assertion, and I think I will be supported by every practical man in the shipping business, that every available steamer suitable for carrying cargoes is employed to its utmost capacity at the present time. There are no idle steamers, except those that are interned and cannot be employed.

Secretary Redfield failed to tell us where he is going to get steamers to carry cargoes. I am a shipper; I am interested in a steamship company, and I think I know from a practical point of view quite as well as Mr. Redfield does from a theoretical point of view.

In Genoa alone at the last report, there were fifty-four steamers unable to get unloading berths to discharge their cargoes. From Havre came a cablegram: "Send no more steamers to Havre. We have no means of affording them space to discharge their cargo and no means of securing sufficient help to do it. The men have gone to war and we cannot handle the cargoes."

In the port of London the vice-president of the International Mercantile Marine showed me a cablegram mentioning the names of steamers that had been there from fifteen days to a month and a half, asking when they would be discharged.

Now, that all takes up a vast amount of the carrying capacity of the world. How is that vacancy going to be supplied? Mr. Redfield says he knows of steamers that can be bought. I wish he had said chartered, because I would take offhand five steamers at the present time and pay enormous rates for them if I could get them. I cannot get them.

Mr. Redfield says the Government can do it. Will a shipowner sell any more readily or charter any more readily to the Government than he would to an individual or to a corporation?

Mr. Ring emphasized the point that the congestion of freight is only in Europe. Contrary to what Mr. Redfield had said, there has been an ample supply of tonnage to South American ports ever since the war began. The high freights are to Europe. Conditions are abnormal. The Government cannot cure them, and shippers and vessel owners must do the best they can until conditions change.

FREE SHIPS ADVOCATED

In his paper Mr. Ring set out in an authoritative way the handicaps of American ownership and operation of vessels in the foreign trade. Of Government purchase as a remedy, he said that if vessels were purchased at high prices now, it would be impossible to operate them profitably later when rates decline. The Government ships would be unfair competition for those now in the trade. On the other hand, if the Government proposes the leasing of such tonnage to private operators, it would have to do it either on a lower basis of cost than in the open market or with a Government endorsement against loss in operation. Either of these methods

would amount to a practical subsidy, and this country has repeatedly gone on record against subsidies. The remedy the speaker advocated was a change in navigation laws which would permit buying ships where they can be bought cheapest and their operation in competition with the ships of other nations.

How the Smaller Manufacturer May Get Export Trade

A large number of the 300 delegates who listened with such close attention to all the papers and discussions belong in the smaller manufacturer class—that is, small as compared with the caliber of consolidations like the Standard Oil Company, the Steel Corporation and the International Harvester Company, which are commonly thought of in connection with exports. The greater part of the Thursday afternoon session was taken up with the topic, "Problems of the Smaller Manufacturer and Merchant in the Development of Foreign Trade."

Commission Houses Recommended

William C. Downs, United States commercial attache for Australasia, presented a paper on the above subject, and was followed by C. D. Mitchell, president of the Chattanooga Plow Company, Chattanooga, Tenn., and H. C. Lewis, of the National Paper & Type Company, New York.

Mr. Downs made the point that there is now no excuse for an American manufacturer, no matter how small, not being able to learn whether his goods are suitable for any particular foreign market. He went over the various Government and other sources of information available and said also that the larger American manufacturers now represented abroad often had inquiries at their foreign offices for products of the smaller manufacturer and might readily pass these on to him under proper co-operation. He suggested the export commission houses as able to help the individual manufacturer, though he questioned if a manufacturer would want to use the export commission merchant to help in his initial investigations unless he intended to call on him later in connection with his selling problems. Rather than entrust his export business to an inferior representative, the speaker suggested that the manufacturer undertake a part of the expense of an exclusive traveler in co-operation with other manufacturers. The speaker had a good opinion of the commission merchant and indicated that one of his most useful services was in financing foreign transactions, particularly in countries which do not have international banking facilities. The commission merchant pays cash to the manufacturer, grants credit to the buyer and assumes the risk.

A Southern Manufacturer's Views

C. D. Mitchell, president of the Chattanooga Plow Company, Chattanooga, Tenn., said that the experience of all exporters proved that the commission man is but a means and not an end. An essential thing he had found was a personal interest of either the buyer or the seller. He had found in a trip to the Latin countries a cordial welcome and a first-hand knowledge as to trade possibilities for his product. If the business a manufacturer could obtain in a foreign field is not sufficient to justify sending his own salesman there, he may combine with other producers. Under existing freight classifications it is impossible for exporters to group shipments and get the benefit both of carload rates and quick delivery at seaboard. It should be practicable for the railroads to allow more leeway in the mixing of commodities, and permit the smaller industries to combine shipments and secure carload rates and service. He had received more than 50 letters from the smaller manufacturers in the South, whose problems in exports were their ignorance of countries, peoples and requirements, and the fact that their lines were too small to justify them in bearing singly the expense of representation. He advocated co-operation by smaller manufacturers so that they would be able to meet the export prices of their larger home rivals and the competition of foreign producers.

A Selling Company Built up by Cooperation

The paper of H. C. Lewis, general manager of the National Paper & Type Company, New York, on "Co-operative Foreign Selling for Smaller Manufacturers," was one of the most practically valuable features of the entire programme. Mr. Lewis's premise was that it is practically impossible for the small American manufacturer to develop an export business for himself and almost equally difficult for the large manufacturer in this country to build up foreign trade if his goods are in comparatively small demand in any one market. Yet Germany has made its goods widely known through the sale of a large number of smaller articles. The methods pursued in Germany are economically wise and beneficial but are contrary to the anti-trust laws of the United States.

A SUCCESSFUL MEXICAN TRADE

As a concrete example of co-operative effort in developing a foreign market the paper recounted the work of the National Paper & Type Company in Mexico. Two competing companies were selling in Mexico through agents. One decided to start a branch house there and the other planned to do likewise. They were engaged in bitter competition at home. On canvassing the situation they found that neither could do enough in Mexico to make it pay, and that the handling of collateral lines was necessary to give sufficient volume. Through the efforts of individuals connected with each it was decided to pool their issues in Mexico. Accordingly a joint company was organized and this was the National Paper & Type Company. The paper recited the methods followed. For two years there was no profit, but in time the branch house became quite profitable and at length branches were established in several cities in Mexico and in several other countries in Latin America. From small beginnings there was gradually developed a million dollar corporation with about 100 stockholders.

ANTI-TRUST LAWS HAMPER

The selling organization described in the paper had agreed in some of its contracts that competing factories should enjoy a certain percentage of its total sales in their lines. This has worked out fairly well but has not been free from difficulties. Certain contracts with competing concerns, in fact, had been canceled because they were in conflict with anti-trust laws. This was unfortunate, as the contracts were valuable to the selling organization and to the factories and worked injury to no one, being also an advantage to the ultimate buyer. Where similar lines have been made by different manufac-

turers certain of these lines for each factory have been particularly pushed so that the total volume has been satisfactory even though some of the goods of each manufacturer had not been sold at all.

The two difficulties in working export trade on this plan are the questions of financing and management. A successful branch manager when found must be well compensated. The author considered it unwise to establish such a business with a man ignorant of foreign conditions, even when highly qualified in the particular lines to be sold. It was found that a man of ability and energy is preferable to a man of high technical knowledge.

A suggested plan for five or ten concerns manufacturing or handling products required by practically the same line of customers and more or less related is to organize a company of $10,000 to $20,000, this capital to be used in financing initial expenses. Let each concern consign its goods at their lowest export prices on the agreement that payment shall be made as payments are received from the ultimate purchaser. The manager may have either a straight salary or a salary and a commission. The result if unfavorable will not bring a heavy loss to any one concern, while in case of success the profits will be quite satisfactory. Arrangements should be made that after a period of three to five years the capital may be increased and the consignment accounts cut out. If such companies are rightly conducted it will only be a question of time when the investing public will become interested in the capital stock of exporting concerns.

Another suggestion which Mr. Lewis said applied rather to the individual than a group of individuals, though the group plan might be followed, was this:

> Let the individual manufacturer or a number of manufacturers send a competent man to investigate certain markets. If the field seems hopeful, and difficulty is encountered in raising capital co-operatively, arrange with some responsible commission house to put in a stock of goods in the foreign city. Supply such commission merchant with a technical salesman at the expense of the manufacturer. The advantage of this plan will be that the commission merchant is or should be entirely responsible for the ultimate payment for the goods shipped, and for the accounts. It eliminates credit risks, and in many cases such an arrangement may be preferable to the organization of a separate company, even though the selling profits be less. The agent who takes his line on a commission generally does not create a permanent business, and he generally requires the manufacturer to assume the burden, and the risk of credits, as well. A local concern can and does collect as a manufacturer situated a long distance from his customers cannot. The seller, who is in daily touch with his customers, can collect more promptly, his customers grow to depend upon the local stock, and they of necessity pay more promptly because of their requirements. It can be said also that one strong concern representing a number of manufacturers of allied lines can do a larger volume of business on less capital with less selling expense, at a greater profit, and give better service than a considerable number of individual concerns working alone.

A Group Meeting

One of the best features of the convention were the conferences held by groups after the regular sessions. There were four of these late Thursday afternoon. That which dealt with the problems of the smaller manufacturer had by far the largest attendance. It was presided over by Edward N. Hurley of Chicago. The views expressed diverged on the question of representation abroad. E. P. McBroom, of St. Louis, who had made a considerable stay in the Argentine selling gasoline engines, believed it necessary for the American manufacturer to send a representative who would live in the country and get the confidence of those to whom he wished to sell. Others agreed with this speaker that American representatives should live abroad long enough to become well acquainted with the people and the language. On the other hand, T. W. Van, St. Louis, believed that a manufacturer could introduce his goods to the dealers of foreign countries through one of his own salesmen, even though the latter did not know the language spoken in the country. The meeting brought out varying views as to the advantages of dealing through commission houses on the one hand and of sending high grade salesmen who have a mastery of the foreign language.

Other Convention Features

The leading address at the banquet of Thursday evening was by President Farrell, of the Steel Corporation, who with all the burdens imposed on him in his own business by the complications due to the war, has put much time and thought into the work of the Foreign Trade Council. After telling of the various legislative measures called out by the war, in the framing of which the council had co-operated, Mr. Farrell suggested that the public imagination had been overstimulated as to the possibilities of Latin-American trade, but pointed out that the extension of American banking operations would prove of great service, particularly if it followed investment lines. Noteworthy in this connection was the recent placing in this market of $15,000,000 of Argentine Government notes. Such loans, he said, "having the effect of maintaining our trade and the demand for American products, cease to be purely foreign investments, but are virtually domestic investments, the funds usually remaining in this country to pay for our exports to the borrowing nation."

President Farrell on Co-operation

Mr. Farrell evidently does not share the view here and there expressed that European competition will be eliminated for a long time after the war. "Each of the belligerents," he said, "will find it necessary to pursue vigorously its foreign trade, to repair the ravages to its domestic commerce, to provide labor to soldiers returned to peaceful pursuits and to ameliorate the burden of taxation." He considered co-operation highly essential in the export movement—co-operation of business men and Government agencies, saying in this connection:

> Foreign trade expansion, while a matter of individual enterprise, requires co-operation in its development, and this was strikingly demonstrated in the formation of the gold pool by banks in all sections of the country to relieve foreign exchange, and other measures to relieve abnormal conditions during the first few months of the war, and it was these forms of governmental and business co-operation which extricated the business of the country from serious embarrassment.
>
> The United States has a long path to travel before it becomes a world trading nation in the fullest sense of the word. Nevertheless, we do possess the resources, the energies and, at last, the public and governmental inclination.

Commercial Education for Foreign Trade

Probably few of the delegates who listened to the discussion of Friday morning on commercial

education for foreign trade were aware of the work now being done by various universities in giving young men an equipment for business in foreign cities. Edwin F. Gay, dean of the Graduate School of Business Administration at Harvard University, took the platform at the opening of the session. What he said was made more telling by forceful, rapid-fire delivery. He admitted that there was lacking among Americans the "international mind" and a sympathetic view of the "foreigners" of the world. The supply of Americans equipped for the various branches of foreign business is plainly inadequate. It is said that the young American is disinclined to learn foreign languages, that he is pleasure-loving and unwilling to leave his native land for the isolation and responsibilities of a foreign station. A large export firm has said that the number of young Americans is small "who are willing to enter foreign service with the determination to make it their life work." Competent and reliable Europeans of good commercial training can be had as foreign representatives of American houses, but the speaker argued that it would be better in the long run to put the management of American business abroad in the hands of men of American breeding, not merely as a matter of patriotism but as a competitive precaution. But ambitious young Americans dread being "shelved" in a foreign country. It will be necessary, therefore, for American concerns to provide a system of changes and promotions.

AMERICAN REPRESENTATION ABROAD IMPROVING

Progress is being made in representation abroad, however, and our European competitors in South America have noted in the last ten years a marked improvement in the character of the Americans doing business there. In response to a demand from business itself, American colleges are organizing courses and establishing schools of business administration. "These alert schools of business training, whether of the evening continuation school type, such as the successful college courses in New York, Philadelphia and Chicago, or undergraduate, as in the great western universities, or partly or wholly graduate as at Dartmouth and Harvard, are keen to serve all business concerns both large and small. They are perhaps especially qualified to cooperate with the smaller enterprises."

Prof. J. W. Jenks of the School of Commerce, Accounts and Finance, New York University, followed Dean Gay. Professor Jenks had spoken effectively at the banquet Thursday night of the opportunities for American young men in foreign fields. A young business man going abroad should have uppermost the idea that he is going as a missionary in the service of his country. He should realize that in promoting the sale of American goods abroad he is not asking a favor but conferring a favor. Professor Jenks supplemented Dean Gay's remarks by indicating the lines of training to be followed in school courses preparing for foreign business careers. He in turn was followed by Prof. G. L. Swiggett, University of Tennessee, Knoxville, Tenn., who advocated national support for schools preparing for the foreign trade. A thoughtful paper on the same subject was submitted by W. D. Simmons, president of the Simmons Hardware Company, St. Louis.

Banking and Credits

John J. Arnold, vice-president of the First National Bank, Chicago, in an address on "Foreign Banking, Loans and Credits," recommended an amendment to our banking laws which would permit banks of the United States to subscribe to the capital stock of banks located in foreign countries to the extent of not more than 5 per cent. of their capital. Subscribing to the capital of such banks should be open also to American exporters and importers and to business interests in the countries of location. The discussion of this paper was highly enlightening, as carrried on by E. A. De Lima, president Battery Park National Bank, New York; F. A. Kent, vice-president Bankers' Trust Company, New York; Louis S. Goldstein, New Orleans, and Murray Carleton, St. Louis. In one of the group meetings W. S. Kies, National City Bank, New York, told of the work of that institution in preparing data for manufacturers on the demands of foreign markets, particularly in South America, and on credit methods, etc.

Notes

The convention was most fortunate in having Alba B. Johnson, head of the Baldwin Locomotive Works, Philadelphia, as its presiding officer. His admirable decision, strength and grasp of the matters in hand impressed themselves upon the proceedings from beginning to end. In no case did a speaker succeed in making himself an exception to the inevitable time limit, or to the determination of the chairman to move forward steadily on the lines mapped out.

John Bassett Moore, long the State Department adviser on questions of international law, gave one of the most informing addresses on the programme in his discussion of problems of war and commerce. He was followed by D. W. Kempner, of the Galveston Cotton Exchange; Henry Howard, vice-president of the Merrimac Chemical Company, Boston, who gave a clear account of war developments in the chemical industry, and by Carman F. Randolph, of New York.

W. A. Reid represented the Pan-American Union and was a source of information to many delegates on questions of trade with the southern republics.

Expert advice from Government sources was abundant. Dr. E. E. Pratt, chief of the Bureau of Foreign and Domestic Commerce, was an active participant. There were present also Charles S. Donaldson, chief of the Consular Division, Department of Commerce; W. A. Graham Clarke, commercial agent, and W. C. Downs, commercial attache for Australasia.

The Foreign Trade Council, while the youngest of national business organizations, has found itself quickly. The whole planning and conduct of the convention showed the hands of seasoned workers. Robert H. Patchin is the Council's secretary, with offices at 64 Stone street, New York.

Delegates from Iron and Metal Working Trades

Among delegates in attendance representing the iron and steel, machinery and kindred trades were the following:

W. W. Anderson, Oil Well Supply Company, Pittsburgh; A. G. Andrews, Andrews Wire & Iron Works, Rockford, Ill.; W. C. Arthurs, Mt. Vernon Car Mfg. Company, Mt. Vernon, Ill.; M. C. Atwood, Western Wheeled Scraper Company, Aurora, Ill.

Frank Baackes, American Steel & Wire Company, Chicago; E. D. Batchelor, Jones & Laughlin Steel Company, St. Louis; A. E. Baldwin, General Electric Company; W. P. Barba, Midvale Steel Company, Philadelphia; G. F. Bentrup, Koken Barbers' Supply Company, St. Louis; John K. Broderick, American Supply and Machinery Manufacturers' Association; C. R. Bryson, Electro Steel Company, Pittsburgh.

G. H. Charls, American Rolling Mill Company, Middle-

(*Continued on page* 269)

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THE IRON AGE

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Co-operation to Increase Exports

A manufacturers' convention without resolutions is rare enough to raise a question as to its success. But that held at St. Louis last week by the Foreign Trade Council was both a convention without resolutions and one of the most worth while in the history of the movement for export trade extension. The questions discussed went to the vitals of export problems, and they were handled for the most part by men who know. The result was probably the largest yield per hour in downright common sense and workable suggestion that has come out of the scores of export conferences, national and local, held in the past year. The decision to have no resolutions emphasized the purpose to give practical information and direction in place of vain repetitions.

There were men at St. Louis who had found out things about foreign trade that others needed to know, and in group meetings which made the process of exchange very direct, experience and inexperience met. So-called "smaller manufacturers" made up a very large part of the convention, and in the separate meeting devoted to the export problems of this class it developed that in a variety of industries enterprising men have been getting more of a foothold in foreign markets than has been commonly appreciated.

As striking as any other development of the convention, perhaps, was the confidence with which the opinion was put forth by some delegates that our manufacturers may combine, without fear of prosecution under anti-trust laws, to carry on an export trade. Such combination, it was freely avowed by those holding this opinion, could include common representation abroad and the naming of lower than domestic prices where necessary to compete with foreign producers, together with other agreements which if in connection with home trade would subject those making them to prosecution under the Sherman act. While the political authorities for this view are undoubtedly high, there is as yet no basis for it in any finding of the courts, and therefore the position of the Amalgamated Copper Company and of various independent steel companies, for example, is that co-operation in furthering export trade by any methods involving price agreements has its dangers.

No one who rightly gauged the spirit of the St. Louis convention could mistake its high character or the intelligence and energy with which the movement is being pushed forward. Here were earnest, able men, who had made a success of their businesses at home, trying to find the best way to extend American trade abroad. Success in this aim would increase American influence in the world, set idle men at work at home and help to bring a return of prosperity long missed. What is proposed by way of co-operation in the foreign trade is just what the world's greatest merchants have evolved in putting Germany and England in the lead in the markets of the world. But what the best minds in Europe have approved, American manufacturers can only attempt under peril of being put on trial as lawbreakers. And yet the men who met at St. Louis last week thought they were counseling for the good of the country, and they looked and acted like honest men.

There is need for serious thinking here. When we see the splendid spirit of the St. Louis convention chilled and its plans for trade extension checked by fear of a vague law, it is time to say and to keep on saying that the indictment of restraint of trade lies against the law more than against American men of business.

Prospects of Railroad Buying

When forecasts are made of the prospects of railroad purchases in the steel industry, there is usually lacking a precise quantitative conception of the proportion of the industry's total output that should normally be bought by the railroads. The tendency is to overrate the proportion, through failure to allow for the fact that in recent years the consumption of steel by users other than railroads has increased more rapidly than has the railroad demand. The railroad system has been a continuous growth for more than three-quarters of a century, while many lines of steel consumption number only a fraction as many years of life. Tin plate, for instance, now practically a million-ton branch of the steel trade, is less than a quarter century old.

It used to be said that the railroads consume between 40 and 50 per cent. of the iron and steel industry's product, and while this statement may have been true at certain periods, it has not been true for any great length of time. Instead of being constantly large buyers of iron and steel, the railroads have been large buyers by periods, as they were passing through certain stages of development. There was especially heavy railroad buying, in proportion to other buying, in the decade of the eighteen eighties, when the building of new road reached its high point, with 12,876 miles of new

road added in 1887. At that same time, it chanced, a large proportion of the iron rails previously laid gave out and were replaced by steel rails, at the rate of thousands of miles of track per year. In the following decade railroad development languished, from financial and industrial causes. In the early years of the present century there occurred a fresh burst in railroad purchasing, made possible by financial conditions, reasonable since the industrial growth of the country furnished more traffic, and practically necessary for physical reasons. The last named influence rested upon the adoption of steel cars and heavy locomotives, which in turn necessitated the strengthening or rebuilding of a great many bridges and viaducts, and the replacement of a very large tonnage of relatively light steel rails with rails of heavier section. Rails gave out rapidly on account of the great increase in the weight of rolling stock, with some increase in train speed, rather than on account of the increase in the freight ton-mileage movement.

During these periods of railroad development the quantities of steel purchased were very large, but they represented special conditions, not the ordinary and normal wear and tear, nor yet a continuous and uniform increase in facilities, measured in the ultimate terms of ability to move passengers or freight, and an error is made when the railroad demand in such periods is taken as normal or standard.

While the idea is probably now entirely dispelled that the railroads can be expected in any year to buy 50 per cent., or even 40 per cent. of the total steel made in the United States, it may be well to emphasize the disparity between railroad requirements and other requirements in steel. The year 1913 was the banner year for rolled steel production, with 23,112,986 gross tons reported. It will be admitted that the railroads consume practically nothing of those descriptions of tubular products known as oil country goods and line pipe, or of tin plate, and scarcely any wire or hoops, yet these products, together with unfinished steel exported, constituted 5,100,000 tons, or 22 per cent. of the total output. The remaining 78 per cent., from which the railroads would draw more or less, comprised rails, structural shapes, plates, sheets, merchant bars, concrete reinforcing bars, bands, standard pipe, etc. In the case of all the products named, excepting rails, the railroad consumption would probably run well below one-half even in periods of exceptional railroad activity. Even of rails the railroads do not buy the entire product, as a large tonnage is exported, and there is in addition a considerable consumption by electric lines, industrial plants, mines, timber operations, etc. In a general way it may be suggested that the proportion of the steel industry's output passing to the railroads in future years will be abnormally low when it is 15 per cent., and abnormally high when it is 30 per cent. It must be noted, of course, that as railroad expansion has been restricted since 1907 there may be room for abnormally large expansion for a few years in the future.

A few years ago some estimates were made of rail wear in proportion to the volume of traffic, based chiefly upon the published statistics of the Pennsylvania system, and indicating that for a few years, or until the ton-mileage freight movement of the country should increase considerably, about a million tons a year of rails should be worn out, and the rail demand from year to year since that time has borne out the estimate quite well. As to new track, there are good prospects. The annual statistics of the Railway Age Gazette showed only 1532 miles of new railroad built in the United States in 1914. The same journal's figures show a slightly smaller mileage in 1894, but Poor's statistics show no mileage as small since 1865. It seems quite impossible that the building of new railroads can have dropped permanently to this low level. Still more remarkable is the showing that in 1914 only 595 miles of secondary main line track was laid. The last report of the Interstate Commerce Commission (1912) shows that precisely 90 per cent. of the railroad mileage was single track, leaving about 225,000 miles to be double tracked when conditions warrant or permit, involving 35,000,000 tons of 100-pound rails. All this is apart from rails required for yard and siding track.

The prospects for freight car building are quite moderate, a fact well recognized by the car builders. In the past ten years there have been built about 1,500,000 freight cars, while on June 30, 1912, there were 2,215,549 cars in freight service, 115,635 cars in railroad company service and 27,876 in fast freight line service. There has been no more than a slight increase since then and possibly there has been a decrease, so that, assuming that none of the cars built ten years ago have worn out, about three-fifths of all the cars now in existence are not over ten years old. There would be left about a million cars more than ten years old, and to replace them at one-tenth the number per year would probably be a fairly high rate. Of the cars in service on June 30, 1912, only 8.1 per cent. were of capacity less than 60,000 pounds. An average of 100,000 cars a year would compare with the maximum of 284,188 cars built in 1907, so that the crest of the tidal wave in car building has long been passed.

In bridge and viaduct building, electrification, block signaling and various other works of improvement there is large room for railroad development, and the future of railroad buying probably lies very strongly along these lines.

The Proposed National Labor Bureau

Jacob H. Schiff, of the banking house of Kuhn, Loeb & Co., New York, is quoted as saying, while advocating before the United States Commission on Industrial Relations the establishment of national employment agencies, that he knew of no employment exchange which had been a success, though he knew that a great deal of money had been spent on these exchanges. Possibly some distinction exists between an employment exchange and a labor bureau, where workmen register for employment and where employers seek their labor. But it cannot be said that the bureaus conducted by the various branches of the National Metal Trades Association and other organizations of manufacturers engaged largely in metal-working industries have not been successful or have not found their fields of effort growing constantly broader. These establishments have co-operated in the distribution of labor, especially of skilled

labor, not only with works in their immediate vicinity, but with industrial centers somewhat widely separated geographically. The question is whether in the evolution of privately conducted labor bureaus such as these and others which will be created, a better work will not be done for both owner and workman than by an organization conducted by the Government.

The employers of the country are constantly becoming better organized in associations. Outside the national bodies of manufacturers, special industries are realizing the great mutual advantages which result from co-operation and the exchange of experiences and ideas. The conduct of these associations has become a recognized profession, and much skill is shown by the salaried executive in the handling of matters which are of importance to the memberships. These organizations will sooner or later develop an interlocking system of labor bureaus, just as the National Metal Trades Association has done. And in times when labor is not in general demand the shifting of unemployed from the dull to the busy center will be carried on intelligently. When labor is in demand the local bureau discourages the efforts of others to get men from the home community. No good can come of transferring men from one busy place to another. Neither can anything be gained by shifting men from one community to another when both have idle help. In the exceptional case when one city or town has too many men and the other too few, existing labor bureaus have helped greatly in assisting men to secure positions for which they are suited. In the past few months this work has been somewhat important.

The transferring of men from one employment to another, especially when industry is below normal—the mechanic to the wheat field, the iron molder to the corn country, the cotton operative to the apple orchard—is a matter that might be worked out with the co-operation of labor bureaus representing the various great industries. So, too, could the placing of immigrants. A successful Federal employment bureau would cost a great deal of money and would require the services of highly trained men in many centers of activity. It is questionable, moreover, if its conduct could be kept free from labor union politics or the efficiency of its service made fully competitive with what is now done by co-operative effort.

Storage Rule for Exports

Manufacturers of machinery and other heavy equipment and materials who make New York their shipping point for export business are disturbed over the action of the Interstate Commerce Commission in reducing the period of free storage of freight for export received at the railroad terminals of that port in less than carload lots. This edict, originally set to go into effect January 1, and afterward deferred to May 1, provides that freight not removed within 48 hours after date of arrival, Sundays and full legal holidays excepted, will be placed in public warehouses at the owner's cost and risk. The rule would supersede the established custom of 10 days of free storage for export freights. Much machinery is shipped in less than carload lots, especially machinery of the somewhat heavy sizes. The understanding among shippers is that the rule, if it is finally established, will apply to all of the larger ports. Organized measures are being taken to bring vigorous protest before the commission, at hearings which will be held in the early spring.

Experience has proved that manufacturers cannot reckon closely in timing deliveries at seaports, even under the best of conditions. At present, with sailings of ocean carriers relatively infrequent and irregular, it would be a matter of great difficulty to deliver, for example, a heavy machine in New York at the right time to avoid the storage burden under a 48-hour rule and catch a steamer for which the machine is billeted. Especially is this true where factories are located at some distance from New York. The shipper, on learning from his forwarders the date of sailing, notifies the railroad that a car will be needed at his works siding on a given day. But railroads are not always punctual in such matters; frequently they cannot avoid delay, especially if a particular type of car is required. Therefore some leeway must be permitted in the reckoning.

Presuming that the ship upon which space has been engaged is to sail on a Saturday, under the 48-hour rule the car must be at the works of the manufacturer in a city 100 miles from New York probably not before Monday, otherwise it might arrive at the terminal too soon, and if the car was delayed to Wednesday the shipment would be too late. If the machine misses the steamer, the next available boat, in these times, might not sail for some days at least. Freight bookings to Europe are now being made well in advance of sailings. At the end of 48 hours the railroad would demand the removal of the machine from the terminal or would send it to a warehouse. The shipper would have to pay the cost of drayage and storage. Considerable expense would be involved. A machine weighing several tons is not handled cheaply. A great deal of export business today is done f.o.b. factory, and the burden of charges would fall on the customer. But in plenty of cases the manufacturer would have to settle. A new element of cost would be introduced into export trade. Under normal conditions American manufacturers have enough to contend with, comparing their costs with those of European competitors. Care should be taken not to add to the handicap.

The shippers are quite reasonable in their ideas. They agree that 10 days may be too long a period of free storage. But they know that 48 hours is far from being sufficient. Their experience has proved it. They merely ask for enough time so that margins of calculation in planning shipments from their factories may accord with the usual efficiency of railroads in moving freight from factory to seaport.

The Allis-Chalmers Mfg. Company, Milwaukee, Wis., is working on one of the largest mining equipment orders booked in the past year. The order is from the Crimora Manganese Corporation, Virginia, and calls for one of the largest manganese mills ever designed. The latter company is largely increasing its production of manganese ore to meet the demand occasioned by the cutting off of much of the foreign supply.

CORRESPONDENCE

Drink and Work.

To the Editor: The workmen's compensation act of New York, defective from many points of view, forces the attention of employers on the drink question. They know, in a general sort of way, that alcohol predisposes to accident but they are apt to neglect the much more important facts that the food value of alcoholic liquor is very slight and the cost is a great drain on the purse of the workman.

The above considerations caused an inquiry as to the amount of beer consumed by 1500 employees in a New York foundry and it was ascertained by actual count that 510 cans at 10 cents each were brought into the works at the lunch period. This cost, while equaling 1½ per cent. of the payroll, does not represent the total consumption per man per day but it shows that far too much is being spent, from the employer's point of view, on a substance that is no real aid as a work producer and a great extravagance as far as food is concerned.

That such a condition is worthy of remedy is easily demonstrable but many employers are unwilling to approach the problem because they fear that the workman will consider his rights are being infringed upon. There is no doubt but that some incipient alcoholics will feel aggrieved but if the employer plans out his campaign slowly and systematically he will have little trouble from naturally sober men who, together with their families, will have reason to thank him. On the other hand the employer gains many advantages in both quality and quantity of work.

The first step, in a scheme of this kind, is to demonstrate quietly the food value of bread, cereal, beans, meat, etc., in comparison with beer, which may be done most easily by leaflet or chart placed in the pay envelope or on bulletin boards. Later on other statistics should show the effects of alcohol on injured men, the difficulty which they experience in recovering and any other facts which show where men lose by drink.

While this educational campaign is in progress an effort should be made to ascertain the viewpoint of workmen as to the supplying of temperance drinks and the possible exclusion of alcoholic liquor from the works.

The next step is to provide a substitute for beer in convenient places in the factory. Employers do not like to face this problem but the contingency has to be met in order to make the plan successful. As a matter of fact there is no great difficulty. It will be found, for instance, that 20 qt. of strong coffee can be made at 5 cents a quart and this decoction can be diluted to half and still make a good drink. Two pounds of finely ground coffee, 4 qt. of milk, 1¾ lb. of sugar, and 36 qt. of water make a drink costing about 2½ cents a quart.

Men who are accustomed to pay 10 cents for beer, which they often drink because nothing else is accessible, will not be slow to recognize the saving effected if they get coffee at about 6 cents less than the beer and without the trouble of going to fetch it. Coffee at 4 cents a drink would leave a margin for working expenses. Workmen like a hot drink in winter but they would probably prefer a cold drink in summer. Iced drinks, however, often cause cramps to furnacemen or those engaged in heavy work in summer and they would find hot coffee the best all-the-year-round drink if they could be induced to take it.

Employers who study this question will find that alcoholics are subject to accident, take longer to recover from the effects, are less accurate, less efficient and more prone to disease than abstainers. All these are good arguments why owners should inquire into the relation between their employees and drink, which is the sort of work which superintendents never seem to have time for. J. D. HACKETT.

New York City, January 15.

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Catalogues Preventing Improvement.

To the Editor: There is no question that ball bearings have come to stay. The way they withstand wear is making engineers sit up and take notice, and their efficiency as compared with the old type of plain bearing is so high as to warrant the commendation of any engineer. Yet, we find that the ball bearing is not being adopted as rapidly as it perhaps should be. The same holds for roller bearings. Manufacturers are prone to stick to the older type that has proved reliable and "efficient enough" for their purposes.

In talking to a manufacturer the other day about his product I asked him why he doesn't use ball bearings. "Well," said he, "ball bearings are better than plain bearings all right, but our catalogues are all made up showing plain bearings and it would be a big nuisance for us to have to make new cuts of all our machines and make the other necessary changes. Perhaps we will begin to use ball bearings in a few years, shortly before we get out our next catalogue."

W. F. S.

The Bridge & Beach Mfg. Company, St. Louis, at the stockholders' meeting held January 19 re-elected directors as follows: Hudson E. Bridge, Leo H. Booch, Henry C. Hoener, John F. Shepley and Louis H. Riecke. The board elected the following officers: Hudson E. Bridge, president and treasurer; Leo H. Booch, vice-president and manager; Henry C. Hoener, vice-president; Louis H. Riecke, secretary.

The Ford Motor Company, Detroit, Mich., announces an order for 40,000 motor cars for shipment to one of the allied nations. It is the largest recorded single order for motor cars and is said to involve $16,000,000 to $18,000,000.

The Iron and Metal Markets

FURTHER RAIL BUYING

Gradual Improvement in Mill Operations

Weakness in Plate Prices—Sharp Advances in Copper and Spelter

On the whole the reports from works give rather a better account of the steel trade than current sales. But it is to be noted that mills have been shutting down and resuming and that only the resumptions get publicity.

The Steel Corporation's report of $10,900,000 earnings in the last quarter of 1914, or $2,500,000 less than the previous low record, in 1904, shows that the last two months of the year were worse than was generally known at the time. The figures should serve to check the tendency in some quarters to take too favorable a view of January conditions, for it has been a creeping improvement and nothing more.

Some further rail orders have been given out—close to 75,000 tons in the West, of which 40,000 tons went to the Colorado mill, made up of 20,000 tons for the Missouri Pacific and 10,000 tons each for the Burlington and the Rio Grande. The Chicago & Eastern Illinois bought 15,000 tons and the Union Pacific 10,000 tons. The Burlington has placed another supplemental order of 5000 tons at Chicago. The St. Paul and the Rock Island are inquiring for about 25,000 tons. Eastern mills have taken 15,000 tons for the Boston & Maine; the Interborough is asking for 5000 tons and the New York, Ontario & Western for 3500 tons.

In the export trade the chief item is the booking of 10,000 tons of rails for the Chilean State Railways. France has bought 10,000 tons in England and Germany has an order from Sweden for 15,000 tons. In spite of high freights some business in semi-finished steel for England has been taken here, including 8000 tons of billets which the Tennessee Company will roll. In wire and shrapnel bars the export demand seems to have subsided. The French reconstruction of bridges, investigation by American structural mills shows, will largely await the ending of the war. Steel for smaller repairs has been placed in England.

Recent rail orders will give the Gary mill work for two months, and in view of its starting up on February 8 one of the idle blast furnaces there has been blown in. The Steel Corporation is also to blow in this week a furnace at Lorain, Ohio, and two in the Pittsburgh district. Active ingot capacity of the corporation is now close to 50 per cent.

In structural work a somewhat better prospect is indicated. About 37,000 tons is represented in live projects in the East, including 15,000 tons for the Pennsylvania Railroad and 13,000 tons for third tracking of elevated railroads in Brooklyn. For track elevation at Indianapolis 20,000 tons will be required and bids are being made on 9500 tons for a bridge in Vancouver.

Pipe line work has come in well. With 155 miles of 8-in. pipe for the Magnolia Petroleum Company and 26 miles of 8-in. pipe for a gas company in Oklahoma, the total closed is 1000 miles.

With a total of 11 vessels now under contract, three about to be placed and others pending, Eastern shipyards look forward to one of their busiest years, apart from the Government's naval programme that will come later.

Galvanized sheets have already advanced $3 a ton, or to 2.90c. for No. 28 due to the sharp rise in spelter, and sellers of sheets are none too ready to quote this figure.

The British market for hematite iron is less excited, following the postponement of Rubio ore and East Coast hematite pig iron contracts. At 100 shillings, or $24.30, now asked for hematite, some business could be done with this country on odd lots worked in at moderate freights. A number of British inquiries have been figured on, calling for sulphur and phosphorus under 0.05 per cent., but without sales thus far.

Mills have booked a fair amount of business in January on bars and structural shapes at 1.10c, Pittsburgh, and the prospect of price readjustments in case a lower level should be established has helped to hold the lines under none too steady conditions. In plates Chicago district sales have been made on a 1.05c. Pittsburgh basis, and there have been such sales also in Central Western territory. One seller of bars asks 1.15c. for March delivery.

Pig iron markets, particularly for Southern iron, are under the pressure of the large stocks accumulated at furnaces. Foundries in Central territory, chiefly jobbing foundries, show some increase in their melt.

The copper and spelter markets have advanced sharply. In the former the extent of the curtailment of production and of the new demand from Europe has figured largely in the comment of the week, with fresh indications that producers have the situation well in hand. That some large spelter interests have declined to quote is significant of further advances.

A Comparison of Prices

Advances Over the Previous Week in Heavy Type, Declines in Italics

At date, one week, one month, and one year previous

	Jan. 27, 1915.	Jan. 20, 1915.	Dec. 30, 1914.	Jan. 28, 1914.
Pig Iron, Per Gross Ton:				
No. 2 X, Philadelphia...	$14.25	$14.25	$14.25	$14.75
No. 2, Valley furnace...	13.00	13.00	13.00	12.75
No. 2 Southern, Cin'ti...	12.40	12.40	12.40	13.75
No. 2, Birmingham, Ala..	9.50	9.50	9.50	10.50
No 2, furnace, Chicago*	13.00	13.00	12.75	13.50
Basic, del'd, eastern Pa.	13.50	13.50	13.50	14.00
Basic, Valley furnace....	12.50	12.50	12.50	12.50
Bessemer, Pittsburgh....	14.55	14.55	14.70	14.90
Malleable Bess., Ch'go*..	13.00	13.00	12.75	13.50
Gray forge, Pittsburgh...	13.45	13.45	13.45	13.40
L. S. charcoal, Chicago..	15.75	15.75	15.75	15.25
Billets, etc., Per Gross Ton:				
Bess. billets, Pittsburgh..	19.50	19.50	19.00	20.50
O.-h. billets, Pittsburgh..	19.50	19.50	19.00	20.50
O.-h. sheet bars, P'gh...	20.50	20.50	20.00	21.00
Forging billets, base, P'gh.	24.00	24.00	24.00	24.00
O.-h. billets, Phila.....	21.40	21.40	21.40	22.40
Wire rods, Pittsburgh...	25.00	25.00	25.00	25.50
Old Material, Per Gross Ton:				
Iron rails, Chicago.....	11.50	11.50	11.25	13.00
Iron rails, Philadelphia..	13.00	13.00	13.00	16.00
Carwheels, Chicago.....	10.00	10.00	9.75	12.00
Carwheels, Philadelphia.	11.00	11.00	10.50	12.50
Heavy steel scrap, P'gh..	*11.50*	11.75	11.25	11.50
Heavy steel scrap, Phila.	10.00	10.00	9.50	11.00
Heavy steel scrap, Ch'go.	*9.25*	9.50	8.75	9.75
No. 1 cast, Pittsburgh...	11.25	11.25	11.25	10.75
No. 1 cast, Philadelphia..	12.00	12.00	11.75	12.00
No. 1 cast, Ch'go (net ton)	*9.00*	9.25	9.25	10.50

*The average switching charge for delivery to foundries in the Chicago district is 50c. per ton.

Finished Iron and Steel, Per Lb. to Large Buyers:	Jan. 27, 1915. Cents.	Jan. 20, 1915. Cents.	Dec. 30, 1914. Cents.	Jan. 28, 1914. Cents.
Bess. rails, heavy, at mill	1.25	1.25	1.25	1.25
Iron bars, Philadelphia..	1.20	1.17½	1.17½	1.22½
Iron bars, Pittsburgh....	1.10	1.15	1.15	1.35
Iron bars, Chicago.....	1.00	0.97½	0.95	1.10
Steel bars, Pittsburgh...	1.10	1.10	1.05	1.20
Steel bars, New York...	1.26	1.26	1.21	1.36
Tank plates, Pittsburgh.	1.10	1.10	1.05	1.20
Tank plates, New York..	1.26	1.26	1.21	1.36
Beams, etc., Pittsburgh..	1.10	1.10	1.05	1.20
Beams, etc., New York...	1.26	1.26	1.21	1.36
Skelp, grooved steel, P'gh	1.10	1.10	1.10	1.20
Skelp, sheared steel, P'gh	1.15	1.15	1.15	1.30
Steel hoops, Pittsburgh..	1.20	1.20	1.20	1.30
Sheets, Nails and Wire,				
Per Lb. to Large Buyers:	Cents.	Cents.	Cents.	Cents.
Sheets, black, No. 28, P'gh.	1.80	1.80	1.80	1.95
Galv. sheets, No. 28, P'gh.	2.90	2.75	2.75	2.95
Wire nails, Pittsburgh....	1.55	1.55	1.50	1.55
Cut nails, Pittsburgh....	1.50	1.50	1.50	1.60
Fence wire, base, P'gh...	1.35	1.35	1.30	1.35
Barb wire, galv., P'gh...	1.95	1.95	1.90	1.95
Coke, Connellsville,				
Per Net Ton at Oven:				
Furnace coke, prompt....	$1.50	$1.50	$1.50	$1.85
Furnace coke, future....	1.65	1.65	1.75	2.00
Foundry coke, prompt...	2.00	2.00	1.90	2.50
Foundry coke, future....	2.15	2.15	2.15	2.60
Metals,				
Per Lb. to Large Buyers:	Cents.	Cents.	Cents.	Cents.
Lake copper, New York.	14.62½	14.00	13.50	15.00
Electrolytic copper, N. Y.	14.37½	13.87½	13.00	14.50
Spelter, St. Louis.....	7.30	6.10	5.40	5.20
Spelter, New York.....	7.50	6.25	5.55	5.35
Lead, St. Louis.....	3.52½	3.50	3.62½	4.02½
Lead, New York.....	3.70	3.70	3.80	4.10
Tin, New York.....	35.50	33.85	33.25	39.12½
Antimony, Hallett's, N. Y.	17.00	17.00	14.00	7.00
Tin plate, 100-lb. box, P'gh.	$3.10	$3.10	$3.10	$3.25

Finished Iron and Steel f. o. b. Pittsburgh

Freight rates from Pittsburgh in carloads, per 100 lb.: New York, 16c.; Philadelphia, 15c.; Boston, 18c.; Buffalo, 11.6c.; Cleveland, 10.5c.; Cincinnati, 15.8c.; Indianapolis, 17.9c.; Chicago, 18.9c.; St. Louis, 23.6c.; Kansas City, 43.6c.; Omaha, 43.6c.; St. Paul, 32.9c.; Denver, 68.6c.; New Orleans, 30c.; Birmingham, Ala., 45c.; Pacific coast, 80c. on plates, structural shapes and sheets No. 11 and heavier; 85c. on sheets Nos. 12 to 16; 95c. on sheets No. 16 and lighter; 65c. on wrought pipe and boiler tubes. The foregoing rates to the Pacific coast are by rail. The rate via New York and the Panama Canal on plates, shapes, etc., is 46c.

Plates.—Tank plates, ¼ in. thick, 6¼ in. up to 100 in. wide, 1.10c., base, net cash, 30 days. Following are stipulations prescribed by manufacturers, with extras:

Rectangular plates, tank steel or conforming to manufacturers' standard specifications for structural steel dated February 6, 1903, or equivalent, ¼ in. and over on thinnest edge, 100 in. wide and under, down to but not including 6 in. wide, are base.

Plates up to 72 in. wide, inclusive, ordered 10.2 lb. per sq. ft., are considered ¼-in. plates. Plates over 72 in. wide must be ordered ¼ in. thick on edge, or not less than 11 lb. per sq. ft., to take base price. Plates over 72 in. wide ordered less than 11 lb. per sq. ft. down to the weight of 3-16 in. take the price of 3-16 in.

Allowable overweight, whether plates are ordered to gauge or weight, to be governed by the standard specifications of the Association of American Steel Manufacturers.

Extras	Cents per lb.
Gauges under ¼ in. to and including 3-16 in....	.10
Gauges under 3-16 in. to and including No. 8....	.15
Gauges under No. 8 to and including No. 9....	.25
Gauges under No. 9 to and including No. 10...	.30
Gauges under No. 10 to and including No. 12...	.40
Sketches (including straight taper plates), 3 ft. and over	.10
Complete circles 3 ft. in diameter and over.....	.20
Boiler and flange steel.....	.10
"A. B. M. A." and ordinary firebox steel.....	.20
Still bottom steel	.30
Marine steel	.40
Locomotive firebox steel	.50
Widths over 100 in. up to 110 in., inclusive.....	.05
Widths over 110 in. up to 115 in., inclusive.....	.10
Widths over 115 in. up to 120 in., inclusive.....	.15
Widths over 120 in. up to 125 in., inclusive.....	.25
Widths over 125 in. up to 130 in., inclusive.....	.50
Widths over 130 in.....	1.00
Cutting to lengths, under 3 ft. to 2 ft. inclusive.	.25
Cutting to lengths, under 2 ft. to 1 ft. inclusive.	.50
Cutting to lengths, under 1 ft.....	1.55

No charge for cutting rectangular plates to lengths 3 ft. and over.

Structural Material.—I-beams, 3 to 15 in.; channels, 3 to 15 in.; angles, 3 to 6 in. on one or both legs, ¼ in. thick and over, and zees, 3 in. and over, 1.10c.

Wire Products.—Fence wire, Nos. 0 to 9, per 100 lb., terms 60 days or 2 per cent. discount in 10 days, carload lots to jobbers, annealed, $1.35; galvanized, $1.75. Galvanized barb wire and fence staples to jobbers, $1.95; painted, $1.55. Wire nails to jobbers, $1.55. Woven wire fencing, 73 per cent. off list for carloads; 72 off for 1000-rod lots; 71 off for less than 1000-rod lots.

The following table gives the price to retail merchants on fence wire in less than carloads, with the extras added to the base price:

Plain Wire, per 100 lb.

Nos.	0 to 9	10	11	12&12½	13	14	15	16
Annealed	$1.50	$1.55	$1.60	$1.65	$1.75	$1.85	$1.95	$2.05
Galvanized ...	1.90	1.95	2.00	2.05	2.15	2.25	2.65	2.75

Wire Rods.—Bessemer, open-hearth and chain rods, $25.

Wrought Pipe.—The following are the jobbers' carload discounts on the Pittsburgh basing card on steel pipe in effect from November 2, 1914, and iron pipe from June 2, 1913, all full weight.

Butt Weld

Steel: Inches	Black	Galv.	Iron: Inches	Black	Galv.
⅛, ¼ and ⅜	74	53½	⅛ and ¼	66	47
½	78	67½	⅜	65	46
¾ to 3	81	72½	½	69	56
			¾ to 2½	72	61

Lap Weld

2	78	69½	1¼	56	45
2½ to 6	80	71½	1½	67	56
7 to 12	77	66½	2	68	58
13 and 14	63½	..	2½ to 4	70	61
15	61	..	4½ to 6	70	61
			7 to 12	68	55

Reamed and Drifted

1 to 3, butt	79	70½	1 to 1½, butt	70	59
2, lap	76	67½	2, butt	70	59
2½ to 6, lap	78	69½	1¼, lap	54	43
			1½, lap	65	54
			2, lap	66	56
			2½ to 4, lap	68	59

Butt Weld, extra strong, plain ends

⅛, ¼ and ⅜	69	58½	⅜	63	52
½	74	67½	½	67	60
¾ to 1½	78	71½	¾ to 1½	71	62
2 to 3	79	72½	2 and 2½	72	63

Lap Weld, extra strong, plain ends

2	75	66½	1½	65	59
2½ to 4	77	68½	2	66	58
4½ to 6	76	67½	2½ to 4	70	61
7 to 8	69	58½	4½ to 6	69	60
9 to 12	64	53½	7 to 8	63	53
			9 to 12	58	47

Butt Weld, double extra strong, plain ends

½	64	57½	½	57	49
¾ to 1½	67	60½	¾ to 1½	60	52
2 to 2½	69	62½	2 and 2½	62	54

Lap Weld, double extra strong, plain ends

2	65	58½	2	55	49
2½ to 4	67	60½	2½ to 4	60	54
4½ to 6	66	59½	4½ to 6	59	53
7 to 8	59	48½	7 to 8	52	42

To the large jobbing trade an additional 5 per cent. is allowed over the above discounts.

The above discounts are subject to the usual variation in weight of 5 per cent. Prices for less than carloads are two (2) points lower basing (higher price) than the above discounts on black and three (3) points on galvanized.

Boiler Tubes.—Discounts to jobbers, in carloads, in effect from May 1, 1914, on steel and from January 2, 1914, on iron, are as follows:

Lap Welded Steel		*Standard Charcoal Iron*	
1⅜ and 2 in.	62	1½ in.	45
2¼ in.	59	1¾ and 2 in.	49
2½ and 2¾ in.	65	2¼ in.	45
3 and 3¼ in.	70	2½ and 2¾ in.	54
3½ and 4½ in.	72	3 and 3¼ in.	57
5 and 6 in.	65	3½ and 4½ in.	60
7 to 13 in.	62	5 and 6 in.	49

Locomotive and steamship special charcoal grades bring higher prices.

2½ in. and smaller, over 18 ft., 10 per cent. net extra.

2¾ in. and larger, over 22 ft., 10 per cent. net extra.

Less than carloads will be sold at the delivered discounts for carloads, lowered by two points for lengths 22 ft. and under to destinations east of the Mississippi River; lengths over 22 ft., and all shipments going west of the Mississippi River must be sold f.o.b. mill at Pittsburgh basing discount, lowered by two points. On standard charcoal iron tubes for desirable orders the above discounts are shaded an extra 5, and occasionally two 5's by some makers.

Sheets.—Makers' prices for mill shipment on sheets of U. S. Standard gauge, in carload and larger lots, on which jobbers charge the usual advance for small lots from store, are as follows, f.o.b. Pittsburgh, terms 30 days net, or 2 per cent. cash discount in 10 days from date of invoice:

Blue Annealed Sheets

	Cents per lb.
Nos. 3 to 8	1.25 to 1.30
Nos. 9 to 10	1.30 to 1.35
Nos. 11 and 12	1.35 to 1.40
Nos. 13 and 14	1.45 to 1.50
Nos. 15 and 16	1.55 to 1.60

Box Annealed Sheets, Cold Rolled

	Cents per lb.
Nos. 10 and 11	1.45 to 1.50
No. 12	1.45 to 1.50
Nos. 13 and 14	1.50 to 1.55
Nos. 15 and 16	1.55 to 1.60
Nos. 17 to 21	1.60 to 1.65
Nos. 22 and 24	1.65 to 1.70
Nos. 25 and 26	1.70 to 1.75
No. 27	1.75 to 1.80
No. 28	1.80 to 1.85
No. 29	1.85 to 1.90
No. 30	1.95 to 2.00

Galvanized Sheets of Black Sheet Gauge

	Cents per lb.
Nos. 10 and 11	1.90
No. 12	2.00
Nos. 13 and 14	2.00
Nos. 15 and 16	2.10
Nos. 17 to 21	2.30
Nos. 22 and 24	2.40
Nos. 25 and 26	2.60
No. 27	2.75
No. 28	2.90
No. 29	3.05
No. 30	3.20

Pittsburgh

PITTSBURGH, PA., January 26, 1915.

While there has been a lull in new buying of iron and steel products in the past week or two, general conditions in the steel trade are much better than they were in November and December. This week the Carnegie Steel Company is operating to 49 per cent. of ingot capacity, and sheet and tin-plate mills are running at a fuller rate than for some time. Specifications against contracts placed in December are coming in at only a moderate rate, consumers evidently deciding to proceed cautiously until fully satisfied that the 1.10c. price on plates, shapes and bars is going to hold. This price is being held by all the mills on new orders, but so far this month little new business has come out. Pig iron is quiet, with prices only fairly steady. Consumers of billets and sheet bars are covered for first quarter and not much is doing in new orders. Coke is dull, and the demand for scrap has dropped off, while prices are showing signs of giving way. The failure of the J. V. Thompson interests is having a disquieting effect on the coke trade. Reports are persistent that a large deal is on involving thousands of acres of coal lands in Greene County, and that if this is put through Mr. Thompson and his associates will be able to make quick cash settlements with their creditors. An official of the Frick Coke Company denies that his company has any deal on with Mr. Thompson for the purchase of coal lands.

Pig Iron.—The Westinghouse Electric & Mfg. Company, which was in the market for 20,000 to 25,000 tons of Nos. 1, 2 and 3 foundry iron, has bought 5000 to 6000 tons for second quarter delivery, but has deferred purchases on third and fourth quarter iron, prices quoted for those deliveries being regarded as too high. Current demand for foundry iron is quiet, as large and small foundries in the Pittsburgh district have very little work. There is practically no new inquiry for Bessemer or basic iron, and prices are only fairly steady, especially on Bessemer. We quote Bessemer iron at $13.60; basic, $12.50; malleable Bessemer, $12.75; No. 2 foundry, $13 to $13.25, and gray forge, $12.50, all at Valley furnace, with a freight rate of 95c. a ton for delivery in the Cleveland and Pittsburgh districts.

Billets and Sheet Bars.—There is not much new inquiry for steel, consumers being pretty well covered over first quarter and some into second quarter. The Carnegie Steel Company reports specifications against contracts for sheet and tin bars coming in at a heavier rate than for some time. Steel mills in the Pittsburgh and Valley districts that make billets and sheet bars are running to about 50 per cent. of capacity. We quote Bessemer and open-hearth billets at $18.50, and Bessemer and open-hearth sheet bars $19, f.o.b. maker's mill, Youngstown; Bessemer and open-hearth billets, $19.50 to $20, and Bessemer and open-hearth sheet bars, $20.50 to $21, f.o.b. maker's mill, Pittsburgh. Forging billets are quoted at $24 for sizes up to but not including 10 x 10 in., and for carbons up to 0.25, the regular extras being charged for larger sizes and higher carbons. Forging billets running above 0.25 to 0.60 carbon take $1 per ton extra. Axle billets are quoted at $21 to $22.

Ferroalloys.—Consumers of ferromanganese in this district report they have had no deliveries on contracts from England for nearly two months, the embargo being held tight. While stocks are fairly large, the nondelivery of material is causing a good deal of uneasiness and prices on ferromanganese from stock are higher. It is possible that the Jones & Laughlin Steel Company may be a seller of ferromanganese later, if the experiment of making it is successful, for which there is every promise. It is stated that several carload lots of English 80 per cent. ferromanganese have been sold from stock recently for prompt delivery at as high as $75 a ton, seaboard. The nominal quotation of $68, seaboard, still holds, but sellers will not guarantee deliveries. We quote 50 per cent. ferrosilicon, in lots up to 100 tons, at $73; over 100 tons to 600 tons, $72; over 600 tons, $71, delivered in the Pittsburgh district. On 10 per cent. ferrosilicon the quotation is $19; 11 per cent., $20, and 12 per cent., $21, f.o.b. cars Jackson County, Ohio, or Ashland, Ky., furnace. We quote 20 per cent. spiegeleisen at $25 at furnace. We quote ferrotitanium at 8c. per lb. in carloads; 10c. in 2000-lb. lots and over, and 12½c. in less than 2000-lb. lots.

Steel Rails.—As indicated in this report last week, the Pennsylvania Railroad has placed 2000 tons of rails each with the Cambria, Carnegie, Bethlehem, Lackawanna and Pennsylvania steel companies. One-half of this amount is to be rolled by each mill from former specifications of the railroad and the other half from the new specifications, which require that the rail bloom shall be allowed to cool to the air temperature and then be reheated. The mill tests to be made by the Pennsylvania Railroad engineers are expected to show the extent to which rails are improved by the new process and this will determine the specifications which will be made the basis for the remainder of the full order of 170,000 tons. The Baltimore & Ohio is expected to close this week for 25,000 tons. Two large foreign inquiries are in the market—one for 30,000 tons of rails for France and the other 12,000 to 15,000 tons for South America—but it will likely be some time before these are placed, if they are given out at all. The new demand for light rails is active, the Carnegie Steel Company having received new orders and specifications in the past week for about 2500 tons. We quote standard section rails made of Bessemer stock at 1.25c., and of open-hearth, 1.34c., f.o.b. Pittsburgh. We quote light rails as follows, in carload lots: 8 and 10 lb. sections, 1.275c.; 12 and 14 lb., 1.225c.; 16 and 20 lb., 1.175c.; 25, 30, 35, 40 and 45 lb. sections, 1.125c.

Structural Material.—New inquiry has quieted down very much, and no large jobs have been placed in this district. The American Bridge Company has taken 500 tons for an addition to the Library building in Detroit, also 500 tons for a warehouse for Townsend & Grace, Baltimore. No award has yet been made on the bridge requirements of the Pennsylvania Railroad. The largest work in the market at present is elevated railroad track work at Indianapolis, which will take about 20,000 tons. Deliveries on this work will run over two years, and bids will be taken January 30. We quote beams and channels up to 15-in. for delivery in this quarter at 1.10c., f.o.b. Pittsburgh.

Plates.—The Carnegie Steel Company has received orders from the National Tube Company for nearly 60,000 tons of plates for pipe lines to be built by the latter interest. These plates are about 28¾ in. wide, ¼ in. thick, and 20 to 22 ft. long. It is reported that the Santa Fe has placed 3000 steel cars with the American Car & Foundry Company, the plates to be rolled by the Illinois Steel Company, and the Illinois Central has an inquiry out for 1000 refrigerator cars. The Carnegie Steel Company has received several large orders for plates for boats to be built by the New York Shipbuilding Company. Current demand is quiet. We quote ¼-in. and heavier plates at 1.10c., f.o.b. Pittsburgh, for first quarter, but this price is only fairly strong.

Tin Plate.—This trade is quiet, as the large buying for 1915 has all been done. The American Sheet &

Tin Plate Company is operating this week to about 90 per cent. of capacity. We quote 100-lb. 14 x 20 coke plates at $3.10 to $3.15, but on a very desirable order the lower price could be shaded.

Sheets.—The heavy advance in the price of spelter has put up galvanized sheets at least $3 a ton. All the leading makers are quoting 2.90c. on No. 28 galvanized for prompt shipment, and will not accept orders for delivery ahead at this price. It is predicted that the market will be 3c. or higher before this week is out. The current demand for black and galvanized sheets is good, and specifications are coming in quite freely. The American Sheet & Tin Plate Company has taken an order for 1000 gross tons of galvanized sheets of one gauge and size for shipment to Tokio, Japan, and has sold about 3200 tons of black sheets to the Pennsylvania Railroad to be used in new cars, which that road is building at its Altoona shops. The company is also making heavy export shipments of sheets to South America and elsewhere. As yet, the advance in galvanized sheets has not affected black, which remains at 1.80c. for No. 28. Prices on blue annealed sheets are firmer, and 1.30c. is minimum for No. 10.

Wire Rods.—The demand is more active than for some time. A local interest has sold 600 tons of open-hearth rods for shipment to England, which netted $25.10 at mill. We quote Bessemer, open-hearth and chain rods at $25, f.o.b. Pittsburgh, but on a desirable order $24.50 could be done.

Shafting.—Makers report new demand much better and state that specifications from automobile builders are heavy. The implement manufacturers are also specifying against contracts, and the shafting trade is more active than for months. Most consumers are covered up to July 1 at low prices. We quote cold-rolled shafting at 67 to 68 per cent. off, delivered in base territory, depending on the order.

Railroad Spikes.—Late last week the New York Central placed about 50,000 kegs of spikes for its various lines, of which over 30,000 kegs were taken by the Jones & Laughlin Steel Company. The Virginian Railroad has placed 3000 kegs, and other roads upward of 15,000 kegs. As yet, none of the roads has specified against spike contracts, and will not do so until mild weather comes and new track laying starts. We quote railroad spikes at $1.35 to $1.40, and small spikes at $1.45 to $1.50, in carload and larger lots, f.o.b. Pittsburgh, for first half.

Skelp.—The new demand is not heavy, as the pipe mills are not running to more than 35 to 40 per cent. of capacity, and prices are fairly strong. We quote: Grooved steel skelp, 1.10c. to 1.15c.; sheared steel skelp, 1.15c. to 1.20c.; grooved iron skelp, 1.50c.; sheared iron skelp, 1.50c. to 1.60c., delivered to consumers' mills in the Pittsburgh district.

Hoops and Bands.—Most consumers of hoops and bands are covered for first quarter, and mills report that specifications are coming in at a fair rate. We quote steel bands at 1.10c., with extras as per the steel bar card, and steel hoops at 1.20c. to 1.25c., Pittsburgh, for first quarter delivery.

Wire Products.—The heavy advance in the price of spelter has firmed up the market on galvanized wire products, but as yet prices are not any higher. The jobbing trade is now specifying against contracts for wire nails and wire to take care of spring trade and shipments by the mills are heavier than for some time. We quote: Wire nails, $1.55; plain annealed wire, $1.35; galvanized barb wire and fence staples, $1.95; painted barb wire, $1.55, all f.o.b. Pittsburgh, freight added to point of delivery, terms 30 days net, less 2 per cent. for cash in 10 days. Prices on woven wire fencing have not been changed as yet, and we quote 73 per cent. off in carload lots, 72 per cent. on 1000-rod lots and 71 per cent. on small lots, f.o.b. Pittsburgh.

Iron and Steel Bars.—The new demand for both iron and steel bars is quiet, as most consumers covered their needs in December through first quarter. Mills report specifications fairly active and shipments heavier than for some time, especially to the implement trade. There is a good demand for reinforcing steel bars, a local mill taking an order last week for 1400 tons. The situation in iron bars is dull and prices continue low. We quote steel bars at 1.10c., and common iron bars, made from part scrap, at 1.10c. to 1.15c., f.o.b. Pittsburgh, for first quarter delivery.

Merchant Steel.—Mills report new demand slightly better and specifications from the large consuming trade for first quarter delivery are coming in at a fair rate. Prices continue to be more or less shaded, and on small lots are about as follows: Iron finished tire, ½ x 1½ in., and larger, 1.30c., base; under ½ x 1½ in., 1.45c.; planished tire, 1.50c.; channel tire, ¾ to ⅞ and 1 in., 1.80c. to 1.90c.; 1⅛ in. and larger, 1.90c.; toe calk, 1.90c. to 2c., base; flat sleigh shoe, 1.65c.; concave and convex, 1.70c.; cutter shoe, tapered or bent, 2.20c. to 2.30c.; spring steel, 1.90c. to 2c.; machinery steel, smooth finish, 1.70c.

Cold-Rolled Strip Steel.—The new demand is better than for some time and prices are also firmer. Makers state that the $2.65 base price has about disappeared and that $2.75 is now being generally quoted on current orders. The order for 2300 tons of cold-rolled strip steel for Russia has not yet been placed. We quote as follows: Hard-rolled steel, 1½-in. and wider, under 0.20 carbon, sheared or natural mill edges, per 100 lb., $2.75 delivered. Extras, which are standard among all the mills, are as follows:

Thickness, in.	Extras for thickness	Extras for soft or intermediate tempers	Extras for straightening and cutting to lengths not less than 24 in.
0.100 and heavier	Base	$0.25	$0.10
0.099 to 0.050	$0.05	0.25	0.15
0.049 to 0.035	0.20	0.25	0.15
0.034 to 0.031	0.35	0.40	0.25
0.030 to 0.025	0.45	0.40	0.40
0.024 to 0.020	0.55	0.40	0.50
0.019 to 0.017	0.85	0.50	1.10
0.016 to 0.015	1.25	0.50	1.10
0.014 to 0.013	1.95	0.50	1.25
0.012	2.30	0.50	coils only
0.011	2.65	0.50	coils only
0.010	3.00	0.50	coils only

Wrought Pipe.—The National Tube Company has taken a contract from the Magnolia Petroleum Company, Texas, for 155 miles of 8-in. line pipe and has also sold 26 miles of 8-in. line pipe to a gas company in Oklahoma. This maker has sold recently upward of 1000 miles of line pipe and reports inquiry active. These heavy sales have imparted a firmer tone to the market, and it would not be surprising if prices on steel pipe would be one or two points higher in the second quarter than they are now. The current demand for iron and steel pipe is fair and the mills are operating to a slightly larger rate of capacity than in December. Discounts on iron and steel pipe are being firmly held.

Boiler Tubes.—The new demand for locomotive and merchant tubes is only fair, and specifications from consumers who are covered through first quarter by contracts are not coming in very freely. Discounts continue to be more or less shaded.

Coke.—The financial difficulties of J. V. Thompson, the extensive coke operator and dealer in coal lands, have unsettled the local coke market to some extent, as has also the receivership for the Tower Hill-Connellsville Coke Company. The new demand for blast-furnace coke is dull, as practically all the active furnaces have covered their needs through first half or over all of 1915. On foundry coke some contracts are being made for delivery up to July 1. We quote standard makes of blast furnace coke for prompt shipment at $1.50 to $1.60, and on contracts at $1.65 to $1.75 per net ton at oven. Best grades of 72-hr. foundry coke are held at about $2 for prompt shipment and $2.15 to $2.25 per net ton at oven on contracts for delivery up to July 1. The Connellsville Courier reports the output of coke in the upper and lower Connellsville regions for the week ended January 16 as 206,850 net tons, a decrease over the previous week of nearly 3000 tons.

Old Material.—The local scrap market is quiet, several large consumers that had been active buyers evidently having covered their needs for some time to come and are now out of the market. The upward movement in prices has stopped and several grades of steel scrap for open-hearth purposes are slightly lower. A sale is reported of 1000 tons of selected heavy steel

scrap at $11.50; 400 tons of machine shop turnings at $7.75, and 300 tons of cast-iron borings at about $8.25, delivered to consumers' mills in the Pittsburgh and nearby districts. For delivery to consumers' mills in the Pittsburgh and other consuming districts that take Pittsburgh freights dealers quote as follows:

Heavy steel melting scrap, Steubenville, Follansbee, Brackenridge, Sharon, Monessen, Midland and Pittsburgh delivery	$11.50 to $11.75
Compressed side and end sheet scrap	10.25 to 10.50
No. 1 foundry cast	11.25 to 11.50
Bundled sheet scrap, f.o.b. consumers' mills, Pittsburgh district	9.25 to 9.50
Rerolling rails, Newark and Cambridge, Ohio, Cumberland, Md., and Franklin, Pa.	11.75 to 12.00
No. 1 railroad malleable stock	10.00 to 10.25
Railroad grate bars	8.50 to 8.75
Low phosphorus melting stock	13.25 to 13.50
Iron car axles	18.75 to 19.25
Steel car axles	13.25 to 13.75
Locomotive axles, steel	19.75 to 20.25
No. 1 busheling scrap	9.75 to 10.00
No. 2 busheling scrap	7.00 to 7.25
Machine shop turnings	7.50 to 7.75
Old carwheels	10.75 to 11.00
Cast-iron borings	8.00 to 8.25
*Sheet bar crop ends	12.00 to 12.25
Old iron rails	12.75 to 13.00
No. 1 railroad wrought scrap	10.75 to 11.00
Heavy steel axle turnings	8.50 to 8.75
Heavy breakable cast scrap	10.75 to 11.00

*Shipping point.

Chicago

CHICAGO, ILL., January 27, 1915—(*By Wire.*)

Business in steel products and pig iron has made appreciable progress. The volume of sales is still far short of what could be desired, but the mills have accumulated enough business to permit the scheduling of increased operations, though at a slow gait. Evidence of this is the programme for the resumption of the Gary rail mill February 8, together with corresponding increases in the plant's steel-making capacity. Rail contracts noted as placed in the West total close to 75,000 tons, with 30,000 tons in prospect. Associated with these orders there are under negotiation 25,000 tons of tie plates and a fair aggregate of other track supplies. Structural bar and plate tonnage still lags far behind, although the demand for reinforcing bars is an interesting feature of the market. There is a little car business—750 for the Santa Fé, a like number for the Union Pacific and 2000 center sills for the Burlington. The relief which sheet makers have been seeking from the season of low prices came with startling swiftness in the form of an advance in the price of spelter so sharp as to throw the galvanized sheet market into confusion, with a resultant withdrawal of all prices by the principal makers. Relief has not yet appeared, but thus far the scarcity of spelter has not affected the mill operations on orders previously taken. A more liberal tonnage of bar iron has been booked and prices are somewhat firmer. The irregularities in bolt prices have finally resulted in the open quoting of heavier discounts. Inquiry for pig iron has increased, although sales last week were few. With the exception of some trading in steel scrap, the old material market has relapsed into dullness, largely on the part of consumers of rolling-mill grades.

Pig Iron.—Sales of pig iron in this market last week were few and of small tonnage, the business being very slow to close. At the same time the amount of inquiry has materially increased and includes a number of substantial tonnages. A few inquiries for last half have appeared. One of the interests which bought most heavily early in December is again inquiring for several thousand tons. Prices for standard grades of iron appear to be maintained despite the incentive offered by increased business in sight. Concessions, however, are reported wherever special analysis requirements present a suitable opportunity. We continue to quote local irons on the basis of $13 at the furnace and Southern iron at $9.50, Birmingham. The selling of the past two months and the promptness with which consumers have been taking out their contract iron since the first of the year have sufficiently reduced stocks on local furnace yards as to make probable the early blowing in of additional furnace capacity. The following quotations are for iron delivered at consumers' yards, except those for Northern foundry, malleable Bessemer and basic iron, which are f.o.b. furnace and do not include a switching charge averaging 50c. a ton:

Lake Superior charcoal	$15.75 to $16.75
Northern coke foundry, No. 1	13.25 to 13.75
Northern coke foundry, No. 2	13.00 to 13.25
Northern coke foundry, No. 3	12.50 to 13.00
Southern coke, No. 1 fdry and 1 soft	13.75 to 14.25
Southern coke, No. 2 f'dry and 2 soft	13.50 to 13.75
Malleable Bessemer	13.00 to 13.25
Standard Bessemer	15.50
Basic	12.50 to 13.00
Low phosphorus	20.00 to 20.50
Jackson Co. and Ky. silvery, 6 per cent.	16.90 to 17.40
Jackson Co. and Ky. silvery, 8 per cent.	17.90 to 18.40
Jackson Co. and Ky. silv'y, 10 per cent.	18.90 to 19.40

(*By Mail*)

Rails and Track Supplies.—Railroad buying assumed more important proportions last week and orders for rails aggregating close to 75,000 tons were placed. Of these the Colorado Fuel & Iron Company took 40,000 tons, made up of 20,000 tons from the Missouri Pacific, 10,000 tons from the Burlington and 10,000 tons from the Denver & Rio Grande. The Union Pacific placed 6000 tons with a Chicago mill and another road closed for 15,000 tons. In addition to these, a number of small lots were placed. Coupled with the buying of rails, western roads have been considering liberal tonnages of tie plates. The Illinois Central has closed and the Milwaukee and Rock Island lines are negotiating contracts the aggregate of which will approach 25,000 tons. The Union Pacific is also in the market for its requirements of angle bars and the booking of spikes and bolts from a number of sources continues. The inquiry of the Southern Pacific for 30,000 tons of rails is still open. We quote standard railroad spikes at 1.50c. to 1.60c., base; track bolts with square nuts, 1.90c. to 2c. base, all in carload lots, Chicago; tie plates, $23.50 to $25, f.o.b. mill, net ton; standard section Bessemer rails, Chicago, 1.25c., base; open-hearth, 1.34c.; light rails, 25 to 45 lb., 1.07c.; 16 to 20 lb., 1.12c.; 12 lb., 1.17c.; 8 lb., 1.22c.; angle bars, 1.50c., Chicago.

Structural Material.—It is reported that a revision of figures is to be made on the Lyon & Healy Building, for which bids have been in for several days. Of other new building work there is very little in sight. Car buying shows no immediate promise of expansion, and about the only new inquiry is that of the Union Pacific for 750 stock cars. The Colorado & Southern, a part of the Burlington system, is in the market for 2000 center sills, and the Haskell & Barker Company has taken an order for 100 cars. Other contracts for fabricated steel placed during the week included 1050 tons of bridge steel placed by the Chicago & Northwestern with the Chicago Bridge & Iron Works; 628 tons for the Farmers Security Bank, South Bend, Ind., with the Rochester Bridge Company; 246 tons for a bridge at Cleveland with the American Bridge Company, and 253 tons for one of the approaches to the proposed Paducah bridge. The structural material price is being firmly maintained and we continue to quote for mill shipments of plain material 1.289c.

We quote for Chicago delivery of structural from stock 1.75c.

Plates.—Except for the buying of a small number of locomotives, the Western roads are still delinquent as a source of plate business. Several contracts for tank steel are reported by Western mills but the tonnage for immediate shipment is far from satisfying. Plates present about the only phase of the heavier steel products market in which concessions from the 1.10c., Pittsburgh, price are being made as the requisite to securing business. Sales at prices equivalent to 1.05c. and 1.07½c., Pittsburgh, are noted, although it may be assumed that the principal mills are not participants in these irregularities. We quote for Chicago delivery of plates from mill 1.239c. to 1.289c.

We quote for Chicago delivery of plates out of stock 1.75c.

Sheets.—The startling advance in the price of spelter and the advices from producers of this metal that they are sold up for the next two months have re-

sulted in the withdrawal of all prices for galvanized sheets by the leading makers in this territory. Early in the week notices were sent out quoting 2.75c., Pittsburgh, on immediate specifications and terminating all negotiations on contracts. Subsequently the spelter situation became more acute, and while some mills are still quoting on orders for immediate delivery at prices equivalent to 2.90c. Pittsburgh, others are temporarily out of the market, awaiting more settled conditions. The situation has served to bring a small flood of contracts and specifications to the mills but the greater part of this is not being put on the books. Black sheets continue in the doldrums. We quote for Chicago delivery from mill: No. 10 blue annealed, 1.489c.; No. 28 black, 1.989c.; No. 28 galvanized, 2.939c. to 3.089c.

We quote for Chicago delivery from jobbers' stocks as follows, minimum prices applying on bundles of 25 or more: No. 10 blue annealed, 1.95c.; No. 28 black, 2.55c.; No. 28 galvanized, 3.55c.

Bars.—Both railroads and carbuilders have been buyers of bar iron, and local mills report the booking of a better tonnage than for a considerable period. With perhaps one exception the price of 1c. seems to have been the minimum for the business taken, and less desirable specifications were booked at prices as high as 1.05c. Inquiry for reinforcing bars grows steadily, and interest for the current week centers in the public letting of 500 tons at Minneapolis and a similar tonnage by highway commissioners in Iowa. While quotations of 1.10c., Pittsburgh, appear to be the rule for this public business, indications are that quotations on other inquiry are less uniform. Steel-bar specifications are scarce and business is dragging. Rerolling mills in this territory have a fair amount of business on hand, largely for bedstead manufacturers and reinforcing purposes, the lack of implement business being felt here as well as in mild steel. We quote for mill shipments as follows: Bar iron, 1c. to 1.05c.; soft steel bars, 1.289c.; hard steel bars, 1.20c.; shafting in carloads, 65 per cent. off; less than carloads, 60 per cent. off.

We quote store prices for Chicago delivery: Soft steel bars, 1.65c.; bar iron, 1.65c.; reinforcing bars, 1.65c. base, with 5c. extra for twisting in sizes ½ in. and over and usual card extras for smaller sizes; shafting 60 per cent. off.

Rivets and Bolts.—Quotations brought out by recent and current contracting by the railroads show larger discounts in force for practically the full line of bolts, and quotations which have been largely nominal are herewith revised in keeping with recent prices. On very attractive business slightly better discounts are reported. For rivets there is no very well defined market and prices are reported covering a range of from $2 to $4 a ton. We have revised quotations as follows: Carriage bolts up to ⅝ x 6 in., rolled thread, 85-10; cut thread, 85-5; larger sizes, 80-10; machine bolts up to ¾ x 4 in., rolled thread, 85-10-5; cut thread, 85-10; larger sizes, 80-10-5; coach screws, 85-10-10; hot pressed nuts, square head, $7.10 off per cwt.; hexagon, $8.10 off per cwt. Structural rivets, ¾ to 1¼ in., 1.45c. to 1.55c., base, Chicago, in carload lots; boiler rivets, 10c. additional.

We quote out of store: Structural rivets, 2.00c.; boiler rivets, 2.10c.; machine bolts up to ¾ x 4 in., 75-15; larger sizes, 70-10-10; carriage bolts up to ⅝ x 6 in., 75-10; larger sizes, 70-15 off; hot pressed nuts, square head, $6, and hexagon, $6.70 off per cwt.

Wire Products.—With the approach of the heaviest months of the year, business in wire is making its usual gain. Wire-nail orders in the past week were especially satisfactory and bookings of fencing were likewise heavier. We quote to jobbers as follows: Plain wire, No. 9 and coarser, base, $1.539; wire nails, $1.739; painted barb wire, $1.739; galvanized, $2.139; polished staples, $1.739; galvanized, $2.139, all Chicago.

Cast-Iron Pipe.—In the bidding for pipe orders under consideration last week, the American Cast Iron Pipe Company was low bidder on 3600 tons at Chicago, 1800 tons at Columbus, Ohio, and 700 tons at Kansas City, Kan. The United States Cast Iron Pipe & Foundry Company will furnish 12,400 tons for Chicago and 1700 tons for Sioux City, Iowa, and was awarded 900 tons of gas pipe at Milwaukee. Cincinnati will this week buy 1400 tons of high pressure pipe, Muscatine, Iowa, will take 300 tons and Kalamazoo, Mich., 200 to 400 tons. We quote as follows, per net ton, Chicago: Water pipe, 4 in., $25.50; 6 to 12 in., $23.50; 16 in. and up, $23, with $1 extra for gas pipe.

Old Material.—Except for a fairly liberal buying of steel scrap, the past week found most scrap consumers of this territory, particularly melters of rolling-mill grades, out of the market. The contrast with the preceding week was accordingly marked. For No. 1 busheling, mill offers were a full dollar below the prices paid the week before. Other grades of scrap, while suffering much less severely, reflected the influence of the market reaction. The principal sales of heavy melting steel are understood to have been made on the basis of $9.50, delivered. Railroad offerings of scrap are light, due in a measure to the weather conditions which have prevailed throughout this territory. The Santa Fé is offering 3000 tons, the Rock Island 2000 tons, the St. Paul 1200 tons, the Soo Line 1500 tons and the Grand Trunk 750 tons, including 1000 carwheels. We quote for delivery at buyers' works, Chicago and vicinity, all freight and transfer charges paid, as follows:

Per Gross Ton

Old iron rails	$11.50 to $12.00
Old steel rails, rerolling	9.75 to 10.25
Old steel rails, less than 3 ft	10.00 to 10.25
Old carwheels	10.00 to 10.50
Heavy melting steel scrap	9.25 to 9.50
Frogs, switches and guards, cut apart	9.25 to 9.50
Shoveling steel	8.50 to 9.00
Steel axle turnings	7.25 to 7.50

Per Net Ton

Iron angles and splice bars	$11.25 to $11.75
Iron arch bars and transoms	11.25 to 11.75
Steel angle bars	8.25 to 8.50
Iron car axles	13.75 to 14.25
Steel car axles	11.00 to 11.50
No. 1 railroad wrought	8.75 to 9.25
No. 2 railroad wrought	8.25 to 8.75
Cut forge	8.25 to 8.75
Steel knuckles and couplers	8.50 to 8.75
Steel springs	9.00 to 9.50
Locomotive tires, smooth	8.50 to 9.00
Machine shop turnings	5.50 to 6.00
Cast borings	4.75 to 5.25
No. 1 busheling	7.75 to 8.25
No. 2 busheling	6.75 to 7.25
No. 1 boilers, cut to sheets and rings	5.50 to 6.00
Boiler punchings	8.25 to 8.50
No. 1 cast scrap	9.00 to 9.25
Stove plate and light cast scrap	8.25 to 8.50
Grate bars	8.00 to 8.25
Railroad malleable	8.00 to 8.25
Agricultural malleable	7.25 to 7.50
Pipes and flues	7.00 to 7.50

Philadelphia

PHILADELPHIA, PA., January 26, 1915.

Buying on the part of the railroads is developing slowly, but they are doing more in this direction than in recent months, for they are at least purchasing what they urgently need and this, with better activity in buying by shipyards, has caused some of the local steel mills to have a much better week. They got their share of the test orders recently placed for 10,000 tons of rails by the Pennsylvania Railroad when each of five companies got 2000 tons. The Pennsylvania Steel Company also received 8500 tons from the New York, New Haven & Hartford Railroad, and the Maryland Steel Company is to build two large ocean steamers. Locomotive and car building are still lacking, but some attractive budgets are believed to be in course of preparation. One maker of bars has stiffened his quotations for February and March and for the second quarter. In plates activity is more encouraging, partly due to the bright prospects for shipbuilding. The lull in structural material continues. The demand for billets is irregular and on the whole not heavy, although at least one maker booked a larger volume of orders. Sheets are steady only. The buying of pig iron has been almost entirely confined to scattered small lots, and it is evident that melting has not increased though no less iron is being consumed. The demand for old material and coke is light hereabouts.

Advices received here indicate that the high ocean freights resultant from the scarcity of vessels have operated to bring about such a scarcity of iron ore in England that some furnaces may be banked. Ocean freights from Bilbao, Spain, and from Mediterranean

to English ports have been at least doubled, and in some cases trebled, and vessels which go to the Mediterranean are finding it advantageous to hurry back to England in ballast to take on profitable freight rather than delay to take on North African ore. In this situation, if it continues, some authorities in the trade can see a great opportunity for American iron and steel makers, inasmuch as England and the allied countries may be forced to buy here, paying our prices and taking their products home in their own ships and at their own expense.

Iron Ore.—Arrivals in the week ended January 23 were 11,500 tons from Cuba, 7067 tons from Sweden and 5193 tons from Spain. The shipments are against contracts and new business is entirely absent.

Pig Iron.—Indications that the melting of iron is increasing in this territory are few. The buying reported has been almost entirely of small odd lots, many of them special in character, and sellers see a rather healthy condition in the fact that these sales are widely distributed. The largest sale which has come to light is one of 3000 tons of pipe iron for prompt delivery to a local pipe foundry. The Southern Railway is inquiring for 2750 tons of foundry irons for its shops at Lenoir City, Tenn. A foreign inquiry which has been received by several sellers is for 3000 tons of special Bessemer, but not a great deal of interest has been taken in it so far. Some disappointment is felt over the failure of some consumers, particularly in New England, to take more iron than they have been specifying in view of their heavier purchasing of a few weeks ago. These consumers say, however, that they overbought and are themselves disappointed because of the failure of their business to revive to a greater extent. The making of contracts for future deliveries of low phosphorus iron is over and in basic no interest is shown. Quotations for standard brands for early delivery in buyers' yards in this district are as follows:

Eastern Penna. No. 2 X foundry	$14.25 to $14.50
Eastern Penna. No. 2 plain	14.00 to 14.25
Virginia No. 2 X foundry	15.25
Virginia No. 2 plain	15.00
Gray forge	13.50 to 13.75
Basic	13.50 to 14.00
Standard low phosphorus	20.00 to 21.00

Ferroalloys.—No developments of any sort are found in the market for 80 per cent. ferromanganese, and representatives of English producers assert that the nominal price is unchanged at $68, seaboard, subject to confirmation from abroad and the various conditions which have been imposed. Quotations for 50 per cent. ferrosilicon are $71 to $73, Pittsburgh, according to quantity.

Bars.—A prominent producer of steel bars reports that specifications have been fair and its confidence in the immediate future is such that it has advanced its quotation for February and March to 1.30c., Philadelphia, and for the second quarter to 1.35c. The Southern Railway is inquiring for 125 tons of rivet rods. The demand for iron bars has continued to improve slowly and local mills are running nearly full. Makers quote 1.20c., Philadelphia, and higher.

Plates.—The week brought a little increase in the demand for plates, but business is still far below normal. The market is firm at 1.25c. for good-sized lots for prompt shipment, and some first quarter contracts have been made on a basis of 1.30c., Philadelphia, and some for second quarter at 1.35c. The best demand in sight promises to come from shipbuilders who have several inquiries in hand. The Maryland Steel Company is reported to have received an order for two large steamships for the Hawaiian-American Line. The New York Shipbuilding Company, in addition to the boats referred to a week ago, has received an order for a dredge. Plate makers are watching the locomotive works anxiously. It is reported that the Baldwin Locomotive Works was the low bidder on 100 locomotives for the French Government, but that the business has been placed with that company has been denied.

Structural Material.—The lull in structural material is without change except that the market has developed some signs of weakness, although 1.25c., Philadelphia, is still the minimum quoted. Bids are now in on 6000 tons of plate girder work for the Panama Canal. A new project before the trade is an office building for the Victor Talking Machine Company, Camden, N. J., which was lately in the market on another proposition. A new building for the University of Pennsylvania is contemplated. The Southern Railway is inquiring for 750 tons of shapes and plates.

Sheets.—The market is a little more steady and all the mills of a local producer are in operation this week. Prices show no change, the quotation for No. 10 blue annealed sheets being 1.45c. to 1.50c., Philadelphia.

Billets.—The demand for billets appears irregular, some makers reporting that they see no change in the situation and that they are doing but little in this direction, while others say their business of the week was double that of the preceding one. The quotation is unchanged at $21.40, Philadelphia, with forging steel running $4 higher. It remains true that foreign business, if done at all, must be at very low prices.

Coke.—The market continues slow and a trifle easier at the following quotations: Standard Connellsville furnace coke for prompt shipment, $1.55 to $1.60 per net ton at oven; contract furnace coke, $1.75; prompt foundry, $2 to $2.20, and contract foundry at $2.10 to $2.30. Freight rates from the principal producing districts are as follows: Connellsville, $2.06; Latrobe, $1.85, and Mountain, $1.65.

Old Material.—This market appears almost devoid of activity on the part of the mills except in the case of one maker of plates. Dealers continue to buy for shipment to the West. Quotations for delivery in buyers' yards in this district, covering eastern Pennsylvania and taking freight rates from 35c. to $1.35 per gross ton, are as follows:

No. 1 heavy melting steel	$10.00 to $10.50
Old steel rails, rerolling	10.50 to 11.00
Low phosphorus heavy melting steel scrap	14.00 to 14.50
Old steel axles	13.50 to 14.00
Old iron axles	17.50 to 18.00
Old iron rails	13.00 to 14.00
Old carwheels	11.00 to 11.50
No. 1 railroad wrought	12.00 to 12.50
Wrought iron pipe	10.00 to 10.50
No. 1 forge-fire	8.00 to 8.50
Bundled sheets	8.00 to 8.50
No. 2 busheling	7.75 to 8.25
Machine shop turnings	8.00 to 8.50
Cast borings	8.00 to 8.50
No. 1 cast	12.00 to 12.50
Grate bars, railroad	8.50 to 9.00
Stove plate	8.50 to 9.00
Railroad malleable	9.00 to 9.50

Buffalo

BUFFALO, N. Y., January 25, 1915.

Pig Iron.—Inquiry has been light and reports from furnacemen show that little new business is being transacted, orders received consisting of small tonnages only. The foundry trade continues quiet in most branches and generally has been at a lower ebb in this district than reported a week ago. Shipments requisitioned for on contracts aggregate less, although most producers report a fair volume of iron going out. Prices, which are strongly held by sellers, are unchanged as follows, f.o.b. furnace, for first half delivery:

No. 1 foundry	$13.25 to $13.50
No. 2X foundry	13.00
No. 2 plain	12.75 to 13.00
No. 3 foundry	12.75 to 13.00
Gray forge	12.75
Malleable	13.00
Basic	13.25 to 13.50
Charcoal, regular grades and analysis	16.00 to 17.00

Finished Iron and Steel.—Specifications against contracts, as well as new orders for bars, shapes and plates received during the week, have been a little disappointing as to volume, due in part to weather conditions in the district. Specifications have been coming in pretty freely against tin-plate and wire contracts,

and some improvement is noted in cold-rolled steel. The general feeling continues hopeful, and it is believed by mill representatives that February will show as much improvement over January in business placed as January has so far shown over December. Prices are firm, with a tendency on the part of mills and sales agencies not to contract far ahead. An order for a considerable tonnage of bars on which the buyer canvassed all the leading interests to get a more favorable price and delivery term was finally booked today at 1.10c., Pittsburgh, for present quarter delivery. The Durolithic Company, Buffalo, was low bidder on the general contract for the State Hospital building at Binghamton, N. Y., in which about 250 tons of structural steel is involved. Bids are being taken this week for steel for a high school and hall for the Nazareth Academy, Rochester, about 200 tons, and bids will be taken about February 1 for a theater building, Geneva, N. Y., requiring a small tonnage of structural shapes. The Onondaga Structural Steel Company, Syracuse, has the contract for steel for the Pierce, Butler & Pierce pattern foundry and warehouse at Eastwood, N. Y.

Old Material.—The demand has fallen off somewhat as compared with last week, although a good volume of business is still being transacted in turnings, borings and heavy melting steel scrap. Practically all tonnages now being turned over consist of scrap that is in transit or was recently purchased by dealers, no great amount being handled from yards, as dealers are inclined to hold material thus stored for better prices. Current prices remain unchanged. We quote dealers' selling prices, per gross ton, f.o.b. Buffalo, as follows:

Heavy melting steel	$10.25 to $10.75
Low phosphorus steel	12.50 to 13.00
No. 1 railroad wrought scrap	10.00 to 10.50
No. 1 railroad and machinery cast	10.50 to 11.00
Old steel axles	12.00 to 12.50
Old iron axles	16.00 to 16.50
Old carwheels	10.00 to 10.50
Railroad malleable	9.50 to 10.00
Machine shop turnings	5.50 to 6.00
Heavy axle turnings	8.50 to 9.00
Clean cast borings	5.75 to 6.50
Old iron rails	11.00 to 11.50
Locomotive grate bars	9.00 to 9.50
Stove plate (net ton)	8.25 to 8.75
Wrought pipe	6.50 to 7.00
Bundled sheet scrap	7.00 to 7.50
No. 1 busheling scrap	7.50 to 8.00
No. 2 busheling scrap	5.25 to 5.75
Bundled tin scrap	10.00

Cleveland

CLEVELAND, OHIO, January 26, 1915.

Iron Ore.—No interest is being shown in the market. While there is no discussion regarding prices, there seems to be no possibility that for the coming season they will be any higher than in 1914. Pig-iron prices are at present about 50c. per ton lower than when ore prices for 1914 were established last May. We repeat 1914 prices as follows: Old range Bessemer, $3.75; Mesaba Bessemer, $3.50; old range non-Bessemer, $3; Mesaba non-Bessemer, $2.85.

Pig Iron.—That the foundry melt has improved is indicated by the larger volume of shipping orders. Furnace shipments are apparently about 10 per cent. better than they were a few weeks ago. There is a somewhat better demand for shipments of malleable iron as well as for foundry grades. The market continues inactive. We note the sale of 500 tons of low phosphorus iron, on which our quotation is reduced 25c. Other sales are in small lots, mostly for early shipment, the aggregate tonnage booked being small. Prices are unchanged. Southern iron is dull, with prices unchanged at $9.50 to $10. We quote delivered Cleveland as follows:

Bessemer	$14.55
Basic	13.45
Northern No. 2 foundry	13.50
Southern No. 2 foundry	$13.50 to 14.00
Gray forge	13.00
Jackson Co. silvery, 8 per cent. silicon	16.62 to 17.12
Standard low phos., Valley furnace	19.75 to 20.00

Coke.—The market is almost lifeless and prices are not firm. We quote standard makes of furnace coke at $1.50 to $1.60 per net ton at oven for prompt shipment and best makes of foundry coke at $2.25 to $2.50 for prompt shipment and contract.

Finished Iron and Steel.—Specifications and current orders have improved. The demand has broadened considerably and quite a few consumers are ordering material faster than they expected when they placed contracts. Prices on steel bars and structural material are firm at 1.10c., Pittsburgh, but there is still some shading to 1.05c. by smaller mills on desirable orders for plates. Considerable new structural work, mostly requiring small lots of material, is in prospect. Bids will be received January 30 for 20,000 tons for the Pennsylvania grade crossing elimination work in Indianapolis, and a Cleveland fabricator is figuring on a bridge in Vancouver, B. C., requiring 9500 tons. An inquiry is out for 350 tons for a new building for the Union Rolling Mill Company. A terminal warehouse in Cleveland will require about 2000 tons and two school buildings in Toledo will take about 300 tons each. The Nickel Plate Railroad has placed 5000 tons of rails, dividing its order between the Illinois Steel Company and the Lackawanna Steel Company. The former will furnish the spikes and bolts for laying the rails and the latter the angle bars. The demand for forging billets in one and two carload lots has improved. Some of this business has been taken at a slightly lower rate than the usual price of $24, Pittsburgh. Owing to the advance in spelter, sheet makers have raised the price on galvanized sheets to 2.90c. for No. 28. We quote No. 28 black sheets at 1.80c. to 1.85c., Ohio mill, and blue annealed sheets at 1.30c. to 1.35c. for No. 10. A Cleveland manufacturer has taken an order for 25,000 additional steel barrels for export, with an option on 50,000, making an aggregate of about 150,000 ordered within the last few weeks. The bar-iron market is inactive, with a general quotation of 1.15c., Cleveland mill, for local delivery. Warehouse prices are 1.80c. for steel bars and 1.90c. for plates and structural material.

Old Material.—With an increase in the supply offered and a falling off in the demand the scrap market is weaker. Mills are well filled for February and will not pay the higher prices dealers have been asking. Small lots of most grades are being sold at about 25c. lower than prevailed a week or two ago. In the Valley, heavy melting steel has declined to $10.75 to $11. For Cleveland delivery, prices, with the exception of turnings, are not lower, owing to the fact that during the recent advance the local market was not affected as much as in other districts, particularly Pittsburgh, and Cleveland prices remained comparatively low. We quote, f.o.b. Cleveland, as follows:

Per Gross Ton

Old steel rails, rerolling	$11.00 to $11.75
Old iron rails	12.00
Steel car axles	12.75 to 13.25
Heavy melting steel	9.75 to 10.00
Old carwheels	10.00 to 10.50
Relaying rails, 50 lb. and over	23.00 to 25.00
Agricultural malleable	8.00 to 8.50
Railroad malleable	9.75 to 10.00
Light bundled sheet scrap	8.00 to 8.50

Per Net Ton

Iron car axles	$16.00 to $16.50
Cast borings	6.00 to 6.50
Iron and steel turnings and drillings	5.25 to 5.75
Steel axle turnings	6.00 to 6.25
No. 1 busheling new	8.75 to 9.00
No. 1 busheling old	8.25 to 8.50
No. 1 railroad wrought	9.25 to 9.75
No. 1 cast	10.00 to 10.50
Stove plate	7.50

Bolts, Nuts and Rivets.—The demand for bolts and nuts has improved materially and prices are firmer. While recent low quotations have not entirely disappeared, several leading makers have withdrawn such prices and are now quoting regular discounts, which means an advance of 5 to 10 per cent. Some of the plants are now being operated at as high as 80 per cent., as compared with 50 to 60 per cent. a few weeks ago. Rivets are quoted at 1.45c., Pittsburgh, for structural and 1.55c. for boiler, but there is some shading of these prices $1 a ton. Regular discounts are as follows: Common carriage bolts ⅝ x 6 in., smaller or shorter, rolled thread, 80 and 10 and 5 per cent.; cut thread, 80 and 10 per cent.; larger or longer, 75 and 15

per cent.; machine bolts with h.p. nuts, ⅜ x 4 in., smaller or shorter, rolled thread, 80 and 10 and 10 per cent.; cut thread, 80 and 10 and 5 per cent.; larger or longer, 80 per cent.; coach and lag screws, 80 and 5 per cent.; square h. p. nuts, blank or tapped, $6.50 off; hexagon h. p. nuts, blank or tapped, $7.40 off; c. p. c. and t. square nuts, blank or tapped, $6.20 off; hexagon, ⅝ in. and larger, $7.50 off; 9/16 in. and smaller, $8 off; semi-finished hexagon nuts, ⅝ in. and larger, 85, 10 and 10 per cent.; 9/16 in. and smaller, 85, 10, 10 and 10 per cent.

Cincinnati

CINCINNATI, OHIO, January 27, 1915.—(*By Wire.*)

Pig Iron.—Most of the melters in this territory covered for their first quarter needs in December. There are now only a few carload sales reported for prompt shipment and second quarter business is also unsatisfactory. Inquiries are scarce, but there are some unclosed orders in Indiana and Michigan previously mentioned, the largest being for 2000 tons of mixed Southern and Northern grades. Present price schedules in both the South and in the Hanging Rock district are unchanged up to July 1, and melters are not disposed to consider an average advance of $1 for last half delivery. Pig-iron salesmen who have lately made calls on out of town customers confirm reports from local consumers that the melt of foundry iron is increasing, but in the majority of cases the increase is confined to the jobbing foundries. While this condition has aided in moving forward shipments on old contracts, it has not operated as a help in booking new business. When order books are formally opened for last half delivery, it is expected that a stimulating effect will be experienced that will induce buyers who are yet short on a first half supply to come into the market. The usual differential of 50c. per ton on the lower grades of Southern iron is not being observed by many producers in that district. A small sale of gray forge was made last week at $8.75 at furnace. There is some improvement in the Ohio silvery iron situation and $15 at furnace is now considered minimum, although lately a comparatively large tonnage went at a lower figure. Based on freight rates of $2.90 from Birmingham and $1.26 from Ironton, we quote, f.o.b. Cincinnati, as follows:

Southern coke, No. 1 f'dry and 1 soft	$12.90 to $13.40
Southern coke, No. 2 f'dry and 2 soft	12.40 to 12.90
Southern coke, No. 3 foundry	11.90 to 12.40
Southern No. 4 foundry	11.40 to 11.90
Southern gray forge	10.90 to 11.40
Ohio silvery, 8 per cent. silicon	16.26 to 16.51
Southern Ohio coke, No. 1	15.01 to 15.51
Southern Ohio coke, No. 2	14.01 to 14.51
Southern Ohio coke, No. 3	13.76 to 14.01
Southern Ohio malleable Bessemer	14.26
Basic, Northern	14.26
Lake Superior charcoal	15.25 to 17.25
Standard Southern carwheel	26.90 to 27.40

(*By Mail*)

Coke.—Business in both furnace and foundry coke is almost at a standstill. The consumption of 48-hr. coke in the Hanging Rock district is at almost low water mark. Shipments on foundry contracts are said to be moving at a fairly satisfactory rate. The Connellsville prompt shipment quotations are a little soft, and as low as $1.55 per net ton at oven has been done on some furnace coke. Foundry grades range from $2 to $2.25.

Finished Material.—Sheets are firmer, due both to a better demand and also to advances in spelter. The local mill has advanced its quotation on galvanized sheets $2 per ton over last week's quotations, or to 3.05c. to 3.10c. for No. 28, f.o.b. Newport, Ky., or Cincinnati. The first named figure is only quotable for immediate shipment. The inquiry from the South is improving, and a good spring business is expected from that section. Railroad track material is said to be in better demand. Jobbers of barb wire fencing note an improvement that is mostly from the nearby country merchants. Store prices on steel bars and small structural shapes are unchanged around 1.70c. to 1.75c. The tool steel business is very good for this season, with the principal demand coming from the builders of lathes and screw machines.

Old Material.—Prices on all grades of scrap are very weak. While there has been no change from last week's open quotations, it is problematical as to what figures could be obtained on desirable business. The minimum figures given below represent what buyers are willing to pay for delivery in their yards, southern Ohio and Cincinnati, and the maximum quotations are dealers' prices f.o.b. at yards:

Per Gross Ton	
Bundled sheet scrap	$6.25 to $6.75
Old iron rails	11.00 to 12.00
Relaying rails, 50 lb. and up	19.75 to 20.25
Rerolling steel rails	9.75 to 10.25
Melting steel rails	8.75 to 9.25
Heavy melting steel scrap	8.50 to 9.00
Per Net Ton	
No. 1 railroad wrought	$7.50 to $8.00
Cast borings	4.00 to 4.50
Steel turnings	4.00 to 4.50
Railroad cast scrap	9.25 to 9.75
No. 1 machinery cast scrap	9.75 to 10.25
Burnt scrap	6.00 to 6.50
Old iron axles	13.50 to 14.00
Locomotive tires (smooth inside)	8.75 to 9.25
Pipes and flues	5.50 to 6.00
Malleable and steel scrap	6.75 to 7.25
Railroad tank and sheet scrap	4.50 to 5.00

The Hugo Burgheim Company, dealer in scrap iron and relaying rails, Cincinnati, has found it necessary to seek larger office quarters. The company is moving its offices to suite 601 Mercantile Library Building.

Birmingham

BIRMINGHAM, ALA., January 25, 1915.

Pig Iron.—The Southern pig-iron situation continues to be marked by small sales on the basis of $9.50 to $9.75, and a strong effort on the part of the makers to induce customers to take the iron ordered more freely. The lower grades bring a comparatively higher price than the higher grades. A 200-ton lot of mottled sold for $8.75. There is little heard of the old differential of 50c. between certain grades. There is a corresponding lack of inquiry, especially in Southern territory strictly speaking. The inquiry from abroad has been good, but the advance in freight rates and the difficulty in securing ship room have greatly militated against transactions. A shipment of 1000 tons was made to Liverpool last week. While the rail mill at Ensley has shut down for a week after the first four continuous weeks of operation in many months, the blooming mill continues to run. An order for 3000 tons of billets has been secured from a European customer and 3000 tons of steel have been ordered for the construction of a large cotton warehouse in New Orleans. Cement works are reported as quite busy. An officer of the Gulf States Steel Company has returned from a prolonged stay in Europe with orders for steel products, which, it is said, will amount to considerable. Altogether the prospect for a steady consumption of basic iron in the Southern field continues to be quite good. Among the European agents looking over the field with a view to the purchase of wire and other steel products is Percy Donald, of the firm of Rownson, Drew & Glydesdale, Ltd., of London. No actual transactions are as yet reported to have followed his visit. As a general proposition the iron situation has not changed for the better. We quote, per gross ton, f.o.b. Birmingham district furnaces, as follows:

No. 1 foundry and soft	$10.00 to $10.25
No. 2 foundry and soft	9.50 to 9.75
No. 3 foundry	9.00 to 9.25
No. 4 foundry	8.75 to 9.00
Gray forge	8.50 to 8.75
Basic	9.50 to 10.00
Charcoal	22.50 to 23.00

Cast-Iron Pipe.—The gas and water pipe plants are busier than they have been in some time, having received considerable Eastern and Western business, and greater firmness is apparent in prices. The soil pipe factories are not so busy, but expect conditions to improve with the coming of spring and the refilling of warehouses. The inquiry is more brisk than it has been. We quote, per net ton, f.o.b. pipe shop yards, as follows: 4-in., $20; 6-in. and upward, $18, with $1 added for gas pipe.

Coal and Coke.—The Southern market has been sounded for a large supply of coal for Europe, but not a great deal of hope is held out that the business will be landed on account of limited ship room and high freights. The mines are operating on a 50 to 60 per cent. basis. Coke would be weak but for the small output. As it is, satisfactory prices are obtained. We quote, per net ton, f.o.b. oven, as follows: Furnace coke, $2.75 to $2.95; foundry, $3.25 to $3.40, with some grades commanding as high as $3.75.

Old Material.—The scrap market is extremely quiet, the volume of business being quite limited. We quote, per gross ton, f.o.b. dealers' yards, as follows:

Old iron axles	$13.00 to $13.50
Old steel axles	12.50 to 13.00
Old iron rails	12.00 to 12.50
No. 1 railroad wrought	8.50 to 9.00
No. 2 railroad wrought	7.50 to 8.00
No. 1 country wrought	8.00 to 8.50
No. 2 country wrought	7.00 to 7.50
No. 1 machinery cast	9.50 to 10.00
No. 1 steel scrap	8.00 to 8.50
Tram carwheels	8.50 to 9.00
Stove plate	8.00 to 8.50

St. Louis

ST. LOUIS, MO., January 25, 1915.

Pig Iron.—The transactions for the week have ranged from about 200 tons downward, with the aggregate possibly 2500 tons. They have been for prompt or early delivery. There is some raggedness in quotations made. Some interests represented here are holding for higher prices and one furnace is reported as having turned down more than 15,000 tons of Southern iron at $9.75 and $9.50.

Coke.—There are no inquiries of size but deliveries under contract continue fair. By-product coke is in light demand and is quotable at about $4.80 to $4.95 delivered St. Louis.

Old Material.—There is a softer feeling as to prices, but no concessions have been made, neither has the optimistic feeling disappeared. Dealers have become a little more conservative as to their estimates of the revival of business. Consumption of scrap is increasing slowly but steadily, and further improvement is looked for. Relaying rails are still scarce. The lists out include one of 2000 tons from the Clover Leaf and one of 400 tons from G. W. Jennings. We quote dealers' prices, f.o.b. St. Louis, as follows:

Per Gross Ton

Old iron rails	$10.00 to $10.25
Old steel rails, re-rolling	10.25 to 10.50
Old steel rails, less than 3 feet	11.50 to 12.00
Relaying rails, standard section, subject to inspection	21.00 to 23.00
Old carwheels	10.25 to 10.50
No. 1 railroad heavy melting steel scrap	9.50 to 9.75
Shoveling steel	8.75 to 9.00
Frogs, switches and guards cut apart	9.75 to 10.00
Bundled sheet scrap	6.00 to 6.25

Per Net Ton

Iron angle bars	$10.75 to $11.00
Steel angle bars	9.00 to 9.25
Iron car axles	15.00 to 15.50
Steel car axles	10.75 to 11.00
Wrought arch bars and transoms	11.25 to 11.50
No. 1 railroad wrought	8.25 to 8.50
No. 2 railroad wrought	8.00 to 8.25
Railroad springs	8.75 to 9.00
Steel couplers and knuckles	9.25 to 9.50
Locomotive tires, 42 in. and over, smooth inside	9.00 to 9.25
No. 1 dealers' forge	7.50 to 7.75
Mixed borings	5.25 to 5.50
No. 1 busheling	7.75 to 8.00
No. 1 boilers, cut to sheets and rings	6.25 to 6.50
No. 1 railroad cast scrap	9.50 to 10.00
Stove plate and light cast scrap	8.00 to 8.25
Railroad malleable	7.25 to 7.50
Agricultural malleable	6.75 to 7.00
Pipes and flues	6.25 to 6.50
Railroad sheet and tank scrap	6.25 to 6.50
Railroad grate bars	7.50 to 7.75
Machine shop turnings	5.75 to 6.00

Finished Iron and Steel.—In the structural market inquiries are appearing from sources which have not been heard from for some time. Inquiries are not for large amounts, but the aggregate of business is materially larger than a week ago. There is a fair demand for reinforcing material considering the season of the year. The railroads are taking more track repair material and fastenings. In the warehouses there is improved business and the demand in quite lively. All prices are stiffly held and there are intimations of advances shortly in some lines. We quote for stock from warehouse as follows: Soft steel bars, 1.70c.; iron bars, 1.65c.; structural material, 1.80c.; tank plates, 1.80c.; No. 10 blue annealed sheets, 2c.; No. 28 black sheets, cold rolled, 2.55c.; No. 28 galvanized sheets, black sheet gauge, 3.55c.

New York

NEW YORK, January 27, 1915.

Pig Iron.—Little new business has come up in this market, but furnaces are being asked to ship full complements of iron under contracts, as consumers want to get in as much as possible before the advance in freight rates. It is understood that the two recent New Jersey inquiries, one for 2000 tons and the other for 1200 tons, have been closed. Nothing has developed concerning the inquiries for foundry iron from Italy, which appear to be in the hands of a number of exporting firms. High freights are an obstacle to such business and little is expected to come of these inquiries except where small lots can be worked in as ballast in mixed cargoes. The same is true of the inquiries for hematite iron from England. Negotiations are on for such iron in several countries, the specification calling for 0.05 in phosphorus and sulphur. Bids have been taken by one or two firms, but high freights make the putting through of the business doubtful, unless there should be further advance in England. A few sales of Buffalo iron have been made in the East, a part of it malleable. There is some shading of the Buffalo prices that have been generally held since early December. We quote Northern iron for tidewater delivery as follows: No. 1 foundry, $14.45 to $14.95; No. 2 X, $14.20 to $14.45; No. 2 plain, $13.95 to $14.20. Southern iron is nominally $14.50 for No. 1 and $14 to $14.25 for No. 2.

Ferroalloys.—The situation remains unchanged, with no prospects of an early lifting of the British embargo. Revised guarantees by American consumers, fully meeting the latest demands of the British Government as outlined in this column last week, have been sent over by representatives here and the trade now awaits the next move. In the meantime the alloy is provisionally quoted at $68, seaboard. No evidence of anxiety has yet developed as to future supplies. Ferrosilicon, 50 per cent., continues to be quoted at $71 to $73, Pittsburgh.

Finished Iron and Steel.—The volume of new orders has kept up with the rate recently prevailing and this is regarded as a favorable factor rather than otherwise. Present perspective of the sudden increased demand in December appears to show that more was expected in January than is reasonable. The general opinion continues that business will maintain its present level with a gradual increase, though so slight that time alone will serve to measure the betterment. Prices remain stiff and nothing is heard of concessions; some buyers think they could buy bar iron below present quotations if they had a large offering. The largest inquiry in railroad cars is 750 steel underframe stock cars for the Union Pacific, making a total of about 2900 cars now actively under consideration. In the structural field 13,000 tons for the New York Municipal Railways, for third tracking additional parts of the Brooklyn Rapid Transit System (bids to be taken February 4) constitutes the largest new project, and this with the 15,000 tons for the Pennsylvania's 1915 bridge requirements makes a total of 37,500 tons now active. Included in this, in addition to the projects mentioned in this column in late issues, is 400 tons for two bridges for the Cumberland Valley, Harrisburg, Pa., 500 tons for a power house for the Columbia Mills, and 2000 tons for the Arnold Constable store, New York. The lettings since the last report embrace 500 tons for the Niles building, Boston, to the New England Structural Company, 225 tons for the Chesapeake & Ohio Big Sandy bridge, and the following to the American Bridge Company: 400 tons for the Lackawanna's 1915 bridge work, 500 for the Detroit Public Library, 550 tons for the Townsend & Grace building, Baltimore, and 700 tons for the Victor Talking Machine

Company's power house. It is understood that the Hay Foundry & Iron Works has 600 tons for the Standard Arcade building, Broadway. In railroad cars besides the Union Pacific inquiry there are about 50 cars from five or six buyers, mostly for passenger equipment. We quote mill shipments of steel bars, shapes and plates at 1.10c. to 1.15c., Pittsburgh, or 1.26c. to 1.31c., New York, and refined iron bars at 1.20c. to 1.25c., New York. From store we quote iron and steel bars at 1.80c. to 1.85c., New York, and plates and shapes at 1.85c. to 1.90c.

Cast-Iron Pipe.—The city of Troy will open bids January 29 on 570 tons of 16-in., and Ventnor, N. J., February 15, on 425 tons of mostly 14-in. The city of Philadelphia is expected to be in the market soon for 600 tons of 48-in. Private buying continues brisk. The pipe foundries are now so well supplied with work that prices might logically be expected to stiffen, but so far the indications in this direction have not been marked. Carload lots of 6-in. are unchanged at $20 to $20.50 per net ton, tidewater.

Old Material.—The trade is becoming discouraged over the long-continued abstention from buying by Eastern consumers of steel scrap and rolling-mill stock. Accumulations are increasing, so that the supply is making holders of scrap uneasy. It would therefore not be surprising if prices should show some decline in the near future. Wrought pipe is the only commodity on the list showing any strength. Quotations are as follows, per gross ton, New York:

Old girder and T rails for melting	$7.75 to	$8.00
Heavy melting steel scrap	7.75 to	8.00
Relaying rails	19.00 to	19.50
Rerolling rails (nominal)	8.00 to	8.25
Iron car axles	14.00 to	14.25
Steel car axles	10.75 to	11.00
No. 1 railroad wrought	9.25 to	9.75
Wrought-iron track scrap	8.75 to	9.25
No. 1 yard wrought, long	8.75 to	9.25
No. 1 yard wrought, short	7.75 to	8.00
Light iron	3.00 to	3.50
Cast borings	5.50 to	6.00
Wrought turnings	5.50 to	6.00
Wrought pipe	7.50 to	7.75
Carwheels	8.75 to	9.25
No. 1 heavy cast, broken up	9.75 to	10.25
Stove plate	7.50 to	8.00
Locomotive grate bars	6.25 to	6.75
Malleable cast	7.00 to	7.50

B. Nicoll & Co. Open a Boston Office

B. Nicoll & Co., 149 Broadway, New York, announce the opening of a New England office at 806-7 William Lawrence Building, 85 Devonshire street, Boston, in charge of E. Kelly Rothstein, manager of the firm's coal and coke department. On April 1 B. Nicoll & Co. became New England agents for the Chesapeake & Ohio Coal & Coke Company's Admiralty New River smokeless coal.

Boston

BOSTON, MASS., January 26, 1915.

Old Material.—The better prices for future delivery in the Pittsburgh district have not been reflected in this territory, except perhaps indirectly. The dealers expect a gradual improvement, accentuated to some extent when the snow is off the ground. The normal movement at this season is relatively small usually. Prices have not changed. The quotations given below are based on prices offered by the large dealers to the producers and to the small dealers and collectors, per gross ton, carload lots, f.o.b. Boston and other New England points which take Boston rates from eastern Pennsylvania points. Mill prices are approximately 50c. per ton higher.

Heavy melting steel	$8.25 to	$8.50
Low phosphorus steel	13.75 to	14.75
Old steel axles	12.75 to	13.25
Old iron axles	20.25 to	20.75
Mixed shafting	12.00 to	12.25
No. 1 steel wrought and soft steel	8.25 to	8.75
Skeleton (bundled)	5.50 to	5.75
Wrought-iron pipe	7.00 to	7.50
Cotton ties (bundled)	5.25 to	5.75
No. 2 light	3.25 to	3.75
Wrought turnings	5.00 to	5.50
Cast borings	5.00 to	5.25
Machinery cast	10.75 to	11.00
Malleable	7.50 to	7.75
Stove plate	7.00 to	7.50
Grate bars	5.25 to	5.50

British Steel Prices Still Higher

Iron Difficulties Being Adjusted—Spain to Offer Billets—French and German Rail Purchases

(By Cable)

LONDON, ENGLAND, January 27, 1915.

Pig iron continues strong, but not much is doing. Difficulties over East Coast hematite pig iron have been adjusted by mutual postponing of all ore and hematite iron contracts as from January 31. The parties are entering into replacing contracts at about 29s. ($7.05) for Rubio ore, c.i.f. Tees, and 90s. ($21.87) for hematite pig iron. New contracts for hematite would not be booked much below 100s. ($24.30). The British government defines hematite ore in its contraband declaration as light brown and reddish purple ores and also all ores containing ferric oxide either anhydrous or hydrated.

Semi-finished steel is firm. Spain is inclined to offer billets. France bought 10,000 tons of rails here. Germany booked 15,000 tons for Sweden. Nothing is doing in ferromanganese owing to holding up of exports. There is a better tone in tin plates, but export trade is much hindered. Active furnaces in the three principal districts number 166 against 163 a year ago. Stocks of pig iron in Connal's store are 116,125 tons against 114,636 tons last week. We quote as follows:

Tin plates, coke, 14 x 20, 112 sheets, 108 lb., f.o.b. Wales, 14s. ($3.40), against 13s. 3d. ($3.22) last week.

Cleveland pig iron warrants, 57s. 8d. ($14.01), against 56s. 9d. ($13.79) last week.

No. 3 Cleveland pig iron, makers' price, f.o.b. Middlesbrough, 58s. ($14.09), against 57s. ($13.86) last week.

Steel black sheets, No. 28, export, f.o.b. Liverpool, £9 10s. ($46.22), against £9 ($43.79) a week ago.

Steel ship plates, Scotch, delivered local yards, £8 ($39.93).

Steel rails, export, f.o.b. works port, £7 ($34.06), against £6 7s. 6d. ($31.02) to £6 12s. 6d. ($32.23) one week ago.

Hematite pig iron, f.o.b. Tees, 95s. to 100s., nominal, ($23.09 to $24.30).

Sheet bars (Welsh), delivered at works in Swansea Valley, £5 10s. ($26.76).

Steel joists, 15 in., export, f.o.b. Hull or Grimsby, £8 ($38.93), against £7 15s. ($37.71) last week.

Steel bars, export, f.o.b. Clyde, £7 15s. ($37.70), against £7 12s. 6d. ($37.10) last week.

Metal Market

NEW YORK, January 27, 1915.

The Week's Prices

Cents Per Pound for Early Delivery

	Copper, New York			Lead		Spelter	
Jan.	Lake	Electrolytic	Tin, New York	New York	St. Louis	New York	St. Louis
20	14.00	13.87½	34.12½	3.70	3.50	6.50	6.30
21	14.25	14.12½	34.75	3.70	3.50	6.87½	6.75
22	14.25	14.12½	34.95	3.70	3.52½	7.12½	6.87½
23	14.25	14.12½	.....	3.70	3.52½	7.25	7.00
25	14.50	14.37½	35.65	3.70	3.52½	7.50	7.30
26	14.62½	14.37½	35.50	3.70	3.52½	7.50	7.30

Copper continues to advance with direct or indirect foreign demand. Tin is dull but higher. Lead is firmer. Spelter has advanced sensationally and choice grades are scarce. Antimony continues strong.

New York

Copper.—A good business has been done both directly and indirectly for export. Russia is again reported to have been a heavy purchaser for shipment via Japan, while those in this country engaged in making cartridge metal and other war materials in which copper enters are using enormous quantities. On the other hand, the commonplace domestic demand is extremely slack. Considering the heavy exports, the trade believes it likely that production will be increased. Electrolytic is quoted at 14.37½c., cash, New York, and Lake at 14.50c. to 14.75c., cash.

Tin.—The market has been dull and without feature save for a sensational rise in prices in Europe which the trade finds difficult to explain. The best assumption is that London is so congested with freight vessels that tin which has reached port cannot be unloaded, thereby creating a shortage. A little Banca tin has been released and is being shipped direct from the Far East to New York. Purchasing has embraced only metal which is actually needed. London advanced about £13 10s. between January 19 and January 27, and this market followed the upward trend, but nevertheless the metal has sold here ¼c. cheaper than could be done abroad. A desire to take profits is noticed in the number of offerings of 5-ton lots, even consumers being willing to sell with the evident idea that they can buy for their own needs at a lower price later on. The quotation yesterday was 35.50c., New York. Arrivals this month total 2685 tons and there is afloat 2865 tons.

Lead.—Quotations are firm at 3.70c., New York, and 3.52½c., St. Louis. The market is dull at present, but there were a couple of good days in the latter part of last week, when both outsiders and the large interest got their share of a large business. The purchasing appeared to be equally on the part of dealers and foreign buyers. For actual domestic consumption not many sales were made.

Spelter.—The spelter market is much upset. The demand for high-grade brands which are used in the brass mills is strong and they are none too plentiful. For brass mill special from 8.50c. to 9c. is asked, while for very choice grades 13.50c. has been asked. Practically all of the metal that has been taken is going into war materials. The demand for prime Western is comparatively light but its prices have advanced in sympathy with the other grades. Large quantities of spelter are awaiting shipment to Russia or other of the allied countries.

Antimony.—War influences continue to dominate the market for antimony, the prices of which are as follows: Cookson's, 18c. to 18.50c.; Hallet's, 17c. to 17.50c., and other brands, 16c. to 16.50c. There is practically no domestic buying, but from time to time export inquiries come out, especially from Russia. It is again reported that Japan has bought back contracts previously made.

Old Metals.—Prices have moved up, under the stimulus of a heavier demand. Dealers' selling prices are as follows:

	Cents per lb.
Copper, heavy and crucible	13.00 to 13.50
Copper, heavy and wire	12.50 to 13.00
Copper, light and bottoms	11.50 to 11.75
Brass, heavy	9.00 to 9.25
Brass, light	7.50 to 7.75
Heavy machine composition	11.50 to 11.75
Clean brass turnings	8.75 to 9.00
Composition turnings	9.75 to 10.00
Lead, heavy	3.45
Lead, tea	3.20
Zinc, scrap	5.50

Chicago

JANUARY 25.—The extraordinary advance in spelter has been the feature of the week. While quotations have gone as high as 7.20c., Chicago, some spelter producers have declined to quote, stating that they are sold up for two months. If the movement is not a speculative one, the situation is probably treaceable to European sales. Other metal prices have also risen to higher levels and prices for scrap metals have been advanced in sympathy. We have revised our prices and quote as follows: Casting copper, 14.25c.; Lake copper, 14.50c., for prompt shipment; small lots, ⅛c. to ¼c. higher; pig tin, carloads, 36.25c.; small lots, 39.25c.; lead, desilverized, 3.65c., and corroding, 3.90c., for 50-ton lots; in carloads, 2½c. per 100 lb. higher; spelter, 7.20c.; sheet zinc, 9.50c.; Cookson's antimony, 18c. to 20c., for cask lots; other grades, 15c. to 16c. On old metals we quote buying prices for less than carload lots as follows: Copper wire, crucible shapes, 11.50c.; copper bottoms, 9.50c.; copper clips, 11c.; red brass, 10.50c.; yellow brass, 8.25c.; lead pipe, 3c.; zinc, 4c.; pewter, No. 1, 28c.; tinfoil, 31c.; block tin pipe, 32.50c.

St. Louis

JANUARY 25.—The spelter market has been excited, and while the quotation to-day was 7.12½c. the buyer might get the figure but not the metal as most of the supply is sold ahead, in many cases for two months or more. Other metals are quoted as follows: Tin, 38c.; Lake copper, 15c.; electrolytic copper, 14.75c.; Cookson's antimony, 17c.; lead, 3.50c. to 3.55c. The Joplin zinc ore market felt the excitement in spelter and the basis range for 60 per cent. was at the close $53 to $58 per ton, with the top settlement as high as $61, which is getting close to the record figure of 1912, which was $67. Calamine ore commanded a sharp advance at $30 to $33 for 40 per cent., while the choicest lots brought as high as $40. Lead ore was easy at $47. Miscellaneous scrap metals are quoted as follows: Light brass, 5c.; heavy yellow brass, 7c.; heavy red brass and light copper, 8c.; heavy copper and copper wire, 9c.; tea lead, 3c.; zinc, 3c.; lead, 3c.; pewter, 20c.; tinfoil, 25c.

Iron and Industrial Stocks

NEW YORK, January 27, 1915.

The upward movement has not been sustained and some recession in prices of stocks has occurred since last Friday. Bethlehem Steel common fell off sharply when it became known that the directors had decided to pay no dividend on this class of stock at present. The passing of the dividend on United States Steel common was a development which was unexpected, although it had for some time been known that the earnings of the corporation for the last quarter of 1914 had been far under those for any similar previous period. This stock sold down to 48 in the first half hour on Wednesday. The range of prices on active iron and industrial stocks from Wednesday of last week to Tuesday of this week was as follows:

Allis-Chal., com.	10 - 10¾	Pressed Stl., com.	33 - 35½
Allis-Chal., pref.	36 - 37	Pressed Stl., pref.	101⅝-102¼
Am. Can, com.	29¼- 31⅛	Ry. Spring, com.	23½- 25
Am. Can, pref.	95¼- 97⅝	Republic, com.	21 - 21⅞
Am. Car & Fdy., com.	47 - 48	Republic, pref.	76¾- 78⅝
Am. Car & Fdy., pref.	115	Rumely Co., com.	⅞- 1⅞
Am. Loco., com.	26⅝- 28¼	Rumely Co., pref.	2½- 6¼
Am. Loco., pref.	96	Sloss, com.	26⅝- 27⅝
Am. Steel Fdries.	30½- 31	Pipe, com.	9½
Bald. Loco., com.	37⅞- 38½	Pipe, pref.	35
Bald. Loco., pref.	102 -103	U. S. Steel, com.	50⅞- 53⅝
Beth. Steel, com.	48⅛- 52⅝	U. S. Steel, pref.	107½-109
Beth. Steel, pref.	101 -105	West'gh'se Elec.	71 - 72⅝
Case (J. I.), pref.	80	Chic. Pneu. Tool.	52½- 53⅝
Colorado Fuel	26 - 27	Cambria Steel	43½- 45
Deere & Co., pref.	88½	Lake Sup. Corp.	9 - 9½
General Elec.	144¼-145½	Warwick	9½- 9⅝
Gt. N. Ore Cert.	30 - 35⅝	Cruc. Steel, com.	14¼- 15
Int. Harv., com.	96½- 97½	Cruc. Steel, pref.	81¼- 82¾
Int. Harv., pref.	116 -117	Harb. Wk. Ref. com.	47⅞
Nat. En. & St., com.	12 - 12¼	Harb. Wk. Ref., pref.	99
		La Belle Iron, com.	30¼
		La Belle Iron, pref.	109¼

Dividends

The J. G. Brill Company, regular quarterly, 1 per cent. on the preferred stock, payable February 1.

The Dominion Bridge Company, Ltd., regular quarterly, 1¼ per cent., payable February 15.

The Cambria Steel Company, regular quarterly, 1¼ per cent., payable in scrip February 15. The scrip is redeemable in cash in two years with interest at 5 per cent. per annum. Three months ago a quarterly scrip dividend of 1¼ per cent. was declared with similar maturity, interest and redemption terms.

The United States Steel Corporation, regular quarterly, 1¾ per cent. on the preferred stock, payable February 27. The usual quarterly dividend on the common stock has been passed. The declaration on the common stock three months ago was ½ of 1 per cent.

The Ayer & Lord Tie Company, Railway Exchange Building, Chicago, is putting in a block plant at Carbondale, Ill., in connection with the treating plant at that point. It is adding two new cylinders, which will make a total of 10 cylinders in this plant, which is the largest number of cylinders in any wood-paving block plant in the country. Incidentally it makes the company's capacity approximately 33 1/3 per cent. larger. This speaks well for the increase in the use of block paving for interiors of works. The company has purchased all of the equipment necessary for this addition and it is being received at the plant at the present time.

STEEL CORPORATION PENSIONS

In Four Years Over $1,575,000 Has Been Disbursed—Pensioners Now Number 2521

The fourth annual report of the United States Steel and Carnegie Pension Fund, issued January 27, shows that since January 1, 1911, when the fund was established, there has been a total distribution to retired employees of the Steel Corporation in pensions of $1,575,021.33. For the year 1914 the total disbursement from the pension fund amounted to $511,967.90, an excess over the previous year of $89,152.76, and of $230,510.53 over the first year of the fund's existence. The average increase per year in the amounts distributed has been slightly over $75,000.

The Pittsburgh district leads in the amount of money paid out to the aged and infirm former employees of the various subsidiary companies. To retired mill operatives in the Pittsburgh and Valley districts, the sum of $222,656.33 was paid in the year, and to this may be properly added the sum paid to the coke workers in the fields adjacent to Pittsburgh, which amounted to $59,995.66, bringing the total for mills and mines in the Pittsburgh district to the sum of $282,651.99.

Cleveland and vicinity ranked next to Pittsburgh in the amounts paid to pensioners, the sum amounting to approximately $50,000.

In the Chicago district, in which are included the Steel Corporation's works in the city proper and vicinity, the amount distributed to former mill workers was $30,157.86.

In New England to retired employees of the Worcester, Mass., plants the sum of $39,855.56 was distributed.

The iron ore regions of the Northwest received approximately $20,000 and retired employees on the Corporation's various transportation subsidiaries draw $12,057.67. The balance of the fund distributed went to the retired employees of various plants scattered over the country, including the Tennessee Coal, Iron & Railroad Company, to the former employees of which the sum of $3903 was paid in the year.

The report shows that there are now 2521 beneficiaries of the fund. In 1914 612 pensioners were added and 183 discontinued through deaths. For the year, the average pensions for the cases added was $20.40 per month, the average age of the pensioners being 63.33 years and the average term of service 28.76 years.

The fund from which the pensions are paid amounts to $12,000,000, being made up from the Carnegie Relief Fund of $4,000,000 and $8,000,000 which was set aside by the Steel Corporation. All persons who were in the employ of the United States Steel Corporation or any of its subsidiary companies on January 1, 1911, or who have been employed since that date may become eligible for a pension. Under the rules of the fund no pension of less than $12 or more than $100 per month is paid. The pensions are computed as follows:

For each year of service the employee receives 1 per cent. of his average monthly pay received in the last ten years of service. For example, an employee who has been in the service of the company for 30 years and has received an average monthly pay of $80 for the last ten years would be entitled to receive a pension of $24 per month.

All male employees, who have been in the service 20 years or longer, and are 60 years or more of age, are eligible to pension. Women are eligible at the age of 50 years. The records show that a great many of those retired have taken up easier work and add good earnings to their pensions. More than 70 per cent. of those on the pension rolls voluntarily requested to be pensioned. Only in cases where it is obvious that employees are unable to perform their work properly are they requested to retire, and then only on the personal approval of the president of the company employing them. The plan embraces those employees who become permanently and totally incapacitated. At the beginning of the year 1913 the rule relating to permanent disability was amended, so that any employee, age not considered, who has been in the service 15 years and has become absolutely unable to earn a livelihood through no fault of his or hers, as a result of sickness or injuries sustained while not on duty, may be pensioned. If an employee is injured while on duty, he is taken care of by the Voluntary Accident Relief Plan.

All the time lost on account of disability, shut-down or lay-off, not exceeding 2 years' duration in any one period, is credited to employees as service, provided, of course, they return to work as soon as they can after such lay-off.

Pension checks are sent to almost every land under the sun. Many of the foreign born employees of the company prefer to return to their native land when their work days are over, and in such cases, arrange to have their pensions paid through foreign banks or the post office. In cases where a pensioner becomes incompetent to handle his funds, the pension is paid to his wife or to a legally appointed guardian.

Beaumont Iron Works Holds Annual Meeting

The Beaumont Iron Works Company, Beaumont, Texas, held its annual meeting January 21, at which the following were elected directors: T. S. Reed, Sr., president T. S. Reed Grocery Company; B. R. Norvell, president American National Bank; C. T. Heisig; P. A. Heisig, president Heisig-Norvell Grocery Company; R. F. Cheeseman, secretary George W. Smyth Lumber Company; C. L. Wallis, president Petroleum Company, Los Angeles, Cal.; W. C. Tyrrell, vice-president American National Bank; Charles B. Sheeks, and L. J. Black. The following officers were elected: L. J. Black, president and manager; T. S. Reed, Sr., vice-president; B. R. Norvell, treasurer; Charles B. Sheeks, secretary. Officers' reports showed the business to be in excellent financial condition, but that the earnings of the company had been materially affected by the general depression in business in the latter part of 1914, and that the profits for the year were about 40 per cent. of the profits of 1913. The company has no outstanding obligations, and is running on a cash basis. Contemplated extensions and improvements were deferred to the next quarterly meeting of the board of directors, in March, pending the return of normal business conditions.

Large Saw Maker's Diamond Jubilee

Henry Disston & Sons, Inc., Philadelphia, Pa., has completed 75 years of business as a manufacturer of saws and fine tools. The business was founded in 1840 by Henry Disston, and in 1854 he built the first crucible steel saw plant in the United States in order to get the steel exactly suited to his needs. A file works followed in 1866 to supply the quantities of files used in the saw plant, now about 35,000 dozen annually, and gradually the manufacture of a wide variety of tools was undertaken. The control of the business has always remained in the Disston family, and in several cases three generations of the same family have been numbered among the employees, there being at the present time a score of men who have been with the company for over 50 years.

The Cement-Gun Construction Company, Chicago, has been given the contract to incase all the structural steel work on the new power house now being erected in Detroit by the Ford Motor Company. This power plant will have many interesting features, not the least of which will be the method adopted of protecting by the Cement-Gun method all structural steel against damage by fire or corrosion.

The J. E. Moss Iron Works, Wheeling, W. Va., has recently closed contracts for furnishing and erecting 300 tons of structural steel for the Masonic Temple, Charleston, W. Va.; 120 tons for the State Normal School, Athens, W. Va.; 150 tons for the plant of the Burton-Townsend Company, brick maker, Zanesville, Ohio, and 100 tons for the Rex Theater, Wheeling, W. Va.

Export Movement Set Forward at St. Louis

(*Continued from page* 251)

town, Ohio; H. G. Clopper, New Jersey Zinc Company; W. F. Cutler, American Brake Shoe & Foundry Company.

C. A. Dunkelberg, S. F. Bowser & Co., Ft. Wayne, Ind.; J. B. Emerson, Robert W. Hunt & Co., Chicago.

James A Farrell, United States Steel Corporation, New York; James J. Flannery, American Vanadium Company, Pittsburgh; D. W. Frackelton, Chandler & Price Company, Cleveland; J. Rogers Flannery, Flannery Bolt Company, Pittsburgh; A. I. Findley, *The Iron Age*, New York.

R. G. Gardner, Gardner Governor Company, Quincy, Ill.; L. H. Gault, A. Leschen Rope Company, St. Louis; Herman A. Giese, Charles A. Schieren Company, New York.

P. M. Hanson, National Enameling & Stamping Company, Granite City, Ill.; C. H. Haney, International Harvester Company, Chicago; Wm. H. Hays, Iron City Tool Works, Pittsburgh; W. C. Henning, American Supply and Machinery Manufacturers' Association; John Hughes, United States Steel Products Company, New York; C. E. Hodgson, Aluminum Company of America, Pittsburgh; W. S. Horner, Goff, Horner & Co., Pittsburgh; Edward N. Hurley, Hurley Machine Company, Chicago.

M. D. Jeffrey, Jeffrey Mfg. Company, Columbus, Ohio; Alba B. Johnson, Baldwin Locomotive Works, Philadelphia; F. R. Johnson, Standard Sanitary Mfg. Company, Pittsburgh; Archibald Johnson, Bethlehem Steel Company, South Bethlehem, Pa.

John S. Keefe, American Steel & Wire Company, Chicago; L. J. Lewery, American Rolling Mill Company, Middletown, Ohio; Frank J. Llewellyn, American Bridge Company.

W. E. Manning, Youngstown Sheet & Tube Company, Youngstown, Ohio; D. A. Merriman, American Steel & Wire Company, Chicago; D. K. McPherson, Charles A. Schieren Co., New York; J. R. McWane, American Cast Iron Pipe Company, Birmingham, Ala.; T. M. Meston, Emerson Electric Mfg. Company; C. D. Mitchell, Chattanooga Plow Company, Chattanooga, Tenn.; James T. McCleary, American Iron and Steel Institute, New York.

George W. Niedringhaus, St. Louis, Association of Sheet and Tin Plate Manufacturers; W. W. Norton, Kilbourne & Jacobs Mfg. Company, Columbus, Ohio.

M. A. Oudin, General Electric Company, Schenectady, N. Y.; R. H. Page, Trussed Concrete Steel Company; Charles R. Robinson, Lackawanna Steel Company, Buffalo; Robert Radford, Standard Steel Works Company, Philadelphia.

H. S. Sanford, Riter-Conley Mfg. Company; Wm. L. Saunders, Ingersoll-Rand Company, New York; Charles A. Schieren, Jr., Charles A. Schieren Company, New York; W. H. Schlueter, American Hardware Manufacturers' Association; Richard W. Shapleigh, Shapleigh Hardware Company, St. Louis; R. G. Shulze, S. F. Bowser & Co., Ft Wayne, Ind.; H. D. Shute, Westinghouse Electric & Mfg. Company, Pittsburgh; C. W. Stone, General Electric Company; James I. Stephenson, president Cincinnati Iron & Steel Company, Cincinnati.

E. P. Thomas, United States Steel Products Company, New York; B. S. Thompson, American Supply and Machinery Manufacturers' Association; W. H. Taylor, David Williams Company, New York; John E. Thompson, Burroughs Adding Machine Company, Detroit; S. A. Turner, Northwestern Expanded Metal Company; C. W. Townsend, Westinghouse Air Brake Company.

T. W. Van, Koken Barbers' Supply Company; Theodore Vilter, Vilter Mfg. Company, Milwaukee, Wis.

J. W. Wall, Gardner Governor Company, Quincy, Ill.; H. S. Wells, Otis Elevator Company, New York; O. J. Willis, American Sheet & Tin Plate Company.

The European market for American automobiles is to be discussed on Thursday evening, January 28, at the Automobile Club of America, New York City, by A. Ludlow Clayden. The meeting will be held under the auspices of the Metropolitan section of the Society of Automobile Engineers. The address will be devoted mainly to the effects of the war upon the market, and following the address and the discussion, John R. Eustis, of the New York Evening Mail, is to deliver an illustrated lecture on the automobile in modern welfare.

The Union Rolling Mill Company, Cleveland, Ohio, will place contracts shortly for its new mill building and equipment. A 20 or 21 in. merchant bar mill will be installed in a building to be located adjoining the present mill building, which is equipped with an 18-in. bar mill.

STEEL CORPORATION'S BAD YEAR

Earnings in 1914 Smallest in History—Dividend on Common Stock Passed

The statement of its earnings for the last quarter of 1914, just issued by the United States Steel Corporation, enables approximate figures for its total earnings of the year to be made up. Adding the results of the last quarter to those given for the previous quarters, the total is $71,661,149, being the smallest in the history of the corporation. The earnings in 1913 were $137,181,345 and in 1912 were $108,174,673. The next smallest year was 1904 with $73,176,522.

The earnings for the quarter ended December 31, 1914, were only $10,933,170, being the smallest for any quarter in the history of the corporation. The deficit after the payment of the regular 1¾ per cent. dividend on the preferred stock is $5,606,283, which is provided from the undivided surplus of December 31, 1913. The table below compares the last quarter of 1914 with the last quarter of 1913:

	1914	1913
October earnings	$5,580,533	$11,430,461
November earnings	2,798,388	7,392,166
December earnings	2,554,249	4,213,722
Total earnings after deducting all expenses incident to operations, including those for ordinary repairs and maintenance of plants and interest on bonds of the subsidiary companies	$10,933,170	$23,036,349
Less charges and allowances for depreciation:		
Sinking funds on bonds of subsidiary companies and depreciation and extraordinary replacement funds	3,027,444	4,067,791
Sinking funds on U. S. Steel Corporation bonds	1,560,468	1,704,933
Net income	$6,345,258	$17,263,625
Deduct interest for the quarter on U. S. Steel Corporation bonds outstanding and premium on bonds redeemable under sinking funds	5,777,081	5,607,227
Balance	$568,177	$11,656,398
Add net balance of sundry charges and receipts	130,460	.....
Balance	$698,637	$11,656,398
Dividends for the quarter on stocks of the U. S. Steel Corporation:		
Preferred, 1¾ per cent.	6,304,920	6,304,920
Common, 1¼ per cent.	.....	6,353,782
Deficit for the quarter	$5,606,283	$1,002,304
Deficit for the year	$16,965,685	*$31,335,439

*Surplus.

As shown above, the year's operations resulted in a deficit of $16,965,685. This was after the payment of the full 7 per cent. on the preferred stock and 3 per cent. on the common stock.

The Wire Business in Worcester

The wire industry in Worcester, Mass., has improved radically in the past fortnight. The American Steel & Wire Company has been compelled to start a portion of its steel furnaces, and last week the wire mills were operated on Saturday for the first time in some months. New men are being taken on in considerable numbers. The large orders which have been booked include some for foreign shipment, but at least equally important are a number for American consumption, for purposes far removed from war, in manufacturing industries. The independent wire companies report much the same degree of revival. Inquiries are more numerous. Orders are for larger quantities.

Some of the business recently booked in Worcester indicates that the Central and South American countries and the West Indies are coming into the market for wire and wire products which they have been buying in Europe. These customers, at any rate in some cases, have tried to obtain the prices that they have been accustomed to. But they, or their agents, have been compelled to agree that, the cheaper European goods being out of the market, they must now accept products from the United States. They have permitted their stocks to become exceedingly low. The result of this condition is being felt more and more by American manufacturers, whose trade is no longer harassed by European competition.

OBITUARY

Henry Sohn

Henry Sohn, Hamilton, Ohio, died January 17, aged 69 years. He was born in Wurtemburg, Germany, and was brought to this country by his parents when he was two years old. His early years were spent in Cincinnati and he enlisted at the outbreak of the civil war in a regiment recruited in that city. He bore to his grave the scars of a wound received in the service.

For many years Mr. Sohn was a notable figure in the iron trade of the Central West—notable because of his success and also of his ability. In 1875 he and George Adam Rentschler formed a partnership known as Sohn & Rentschler and devoted themselves to the manufacture of light castings. They began by making

HENRY SOHN

a line of staple articles, now long out of date, but then sold in many hardware stores. Mr. Sohn supervised the making of the castings and Mr. Rentschler traveled from town to town making sales. One who is familiar with the circumstances states that it is doubtful if another foundry in the United States has had as profitable a record as this one, which yielded such rich returns as literally to make the partners millionaires. The remarkable thing about the foundry was that it never materially changed in all the years of its existence. It was enlarged from time to time, but it always remained a rather unpretentious place, with an antique, weather-beaten cottage for an office.

When the business was founded the combined capital of the partners was exactly $1000, each contributing $500. So carefully and frugally did they manage that at the beginning they each drew only $5 a week for living expenses. Their receipt for success was plain living and hard work. They bought their pig iron in Cincinnati, in five and ten-ton lots, having it shipped by canal. At first the pig-iron dealers sold them on six months' credit, but the thrifty founders were soon able to discount all bills. The firm of Sohn & Rentschler continued its profitable and honorable career up to March, 1913, when in the great flood that swept down the valley of the Big Miami River, devastating Hamilton and Dayton, the foundry was destroyed, the plant not being worth repairing. After careful deliberation it was decided not to rebuild the foundry but to transfer the business to the Hamilton Foundry & Machine Company, which has a thoroughly modern plant, managed by Henry and Gordon Rentschler.

The firm of Sohn & Rentschler was instrumental in the founding of the Hamilton Corliss Engine Company, which later developed into the Hooven, Owens, Rentschler Company, in which Mr. Sohn served in various capacities. He was from the beginning a director of the company, and for many years had been its treasurer. From the Sohn & Rentschler foundry also grew the Phoenix Caster Company of Indianapolis, of which Mr. Sohn was vice-president and Mr. Rentschler president.

Mr. Sohn was married twice, but never had children. The association between him and his partner was like the friendship of David and Jonathan. The two men were devoted to each other with an affection that was most remarkable. They had the same tastes and the same ideals. Success did not spoil Henry Sohn. He believed in simplicity, honesty and fair dealing. His business life and his private life were marked by the same characteristics.

FRANK AUGUST KLAINE, president of the F. A. Klaine Company, Cincinnati, Ohio, died at his residence in Ft. Thomas, Ky., January 21, aged 65 years. He was born in Germany and came to this country when very young. After being employed in different lines of business, he obtained a position in the Adams & Peckover Foundry Company as foreman, and subsequently became owner of the foundry that was located on the site of the company's present plant. The establishment was later known as the Goodwill Foundry and marketed a line of stoves and ranges bearing that name, which became well known. Mr. Klaine donated liberally to charitable institutions. He leaves his widow, a son and two daughters. His son, Harry A. Klaine, succeeds him in business. His brother, George Klaine, is president of the Star Foundry Company, Covington, Ky.

DANIEL B. STAMBAUGH, president Stambaugh-Thompson Company, hardware merchant, Youngstown, Ohio, died January 14 as the result of a fall a few days before. He was 76 years old and was a native of Mahoning County, near Youngstown. He passed his youth on his father's farm and in 1855 became identified with the development of the iron-ore and coal resources of Ohio, subsequently becoming interested in mining in Colorado and Idaho. He engaged in the hardware business about 40 years ago, the business being incorporated under the present name in 1887. He served through the civil war, rising from the ranks to become captain. He leaves his widow and two daughters, one of his daughters being the wife of David Tod. He occupied a high place in the community, having been one of the men who had helped to develop the city.

DAVID H. GOODELL, Governor of New Hampshire from 1889 to 1891, died January 22 at his home in Antrim, N. H., aged 80 years. He was born in Hillsborough, N. H., and was for a while a farmer and a teacher in various academies. Soon after the Antrim Shovel Company was organized in 1858 he became its secretary and treasurer. He invented what he called the Lightning apple parer, and in 1864 he began manufacturing this article in a small way. This was the foundation of the Goodell Cutlery Company, which now occupies seven factories and employs thousands of persons. Mr. Goodell was a member of the New Hampshire Legislature from 1876 to 1878.

JOHN WOOD, president John Wood Iron Works, Portland, Ore., died January 12, having been in poor health for about a year. He was born in Wales and came to the United States in 1880. After residing two years in Bethlehem, Pa., he removed to Portland, Ore., where he spent the remainder of his life. He was at times connected with the Smith & Watson Iron Works, the Wolff & Zwicker Iron Works and the Columbia Engineering Works, subsequently organizing the John Wood Iron Works. It was largely due to his efforts that the Columbia Engineering Works made the first steel manufactured on the Pacific Coast.

N. S. R. ANDERSON, who for about 22 years was connected with the Longmead Iron Company, Conshohocken, Pa., and later was New York manager for the iron and steel house of J. J. Caine, Philadelphia, died at his home in Brooklyn, N. Y., January 21, aged 59

years. He was born in Kalmar, Sweden, and came to this country about 34 years ago. He leaves a widow and four sons, one of whom is Nils Anderson, of the Debevoise-Anderson Company, New York.

FRED W. SPACKE, head of the F. W. Spacke Machine Company, Indianapolis, Ind., died at his home in that city January 19, aged 43 years. After learning his trade as machinist under Sinker & Davis, makers of engines and boilers, Indianapolis, he perfected patents on engine governors and organized the Monarch Governor Machine Company and later the Speed Changing Pulley Company, selling his interests in these to establish the F. W. Spacke Company.

JOSEPH F. WANGLER, president Joseph F. Wangler Boiler & Sheet Iron Works, St. Louis, died suddenly last week of heart disease, aged 78 years. He had been in business in St. Louis 55 years. He leaves four daughters and two sons. One of the sons, Joseph A. Wangler, will continue in charge of the business, having been the active manager for some time.

Pittsburgh and Nearby Districts

Charles A. Terry, Walter D. Updegraff and H. H. Westinghouse, executors of the estate of George Westinghouse, have sent a letter to stockholders of the Westinghouse Machine Company, East Pittsburgh, Pa., stating that 87 per cent. of the outstanding stock of the company has assented to the plan for exchanging the stock for that of the Westinghouse Electric & Mfg. Company at the rate of three shares for one. The letter reminds stockholders that no additional stock in the Machine Company will be received for exchange after January 26, except at the option of the Electric Company, and subject to such conditions as it may impose. Some of the minority stockholders of the Machine Company have refused to transfer their stock on the basis proposed, and may possibly take the matter into the courts.

The Census Bureau at Washington, D. C., announces that a second census of the manufactures of Pittsburgh and Allegheny County will be undertaken about the first week in February, under the direction of Everett B. White, an expert of the Department of Commerce.

The 25th anniversary of the Republic Iron & Steel Company Relief Association of Youngstown, Ohio, was held recently. James H. Nutt, secretary, stated that since its inception the association has paid out $127,920 in sick, accident and death benefits.

The Standard Chain Company, Pittsburgh, is about to erect a large addition to the electric welding department of its plant at York, Pa. The building will be 100 x 400 ft., of steel frame construction, with cement floors, brick walls and fireproof roof.

No. 1 blast furnace of the Carnegie Steel Company at New Castle, Pa., which has been relined and repaired, went into blast January 22. No. 2 stack will soon be blown out for relining.

The William B. Pollock Company, Youngstown, Ohio, has received an order from the Ohio Iron & Steel Company, Lowellville, Ohio, for four cars to be used in taking hot metal from its Mary furnace to the new open-hearth plant of the Youngstown Iron & Steel Company, now being built adjacent to the furnace.

Last week the Youngstown Sheet & Tube Company, Youngstown, Ohio, notified from 75 to 100 employees in its wire-drawing department of a reduction in wages to average about 10 per cent. Most of the men refused to accept the reduction and left their positions. It is expected that the matter will be adjusted shortly.

Manufacturing plants in the Youngstown district are running at a greater rate of capacity this week than for some months. For the first time in nearly a year all of the 12 open-hearth furnaces in the Ohio works of the Carnegie Steel Company are on full, with the finishing departments operating at about 65 per cent. of capacity. The Brier Hill Steel Company is operating about 60 per cent. of its open-hearth steel capacity, while the Youngstown Sheet & Tube Company is running at about the same rate in its Bessemer and open-hearth steel works and finishing mills. The Youngstown Iron & Steel Company is operating five hot sheet mills. This week the Bessemer steel plant, 10-in. skelp mill and 12 and 20 in. bar mills of the Republic Iron & Steel Company are idle, but the other departments, including the open-hearth steel works, are operating to about 60 per cent.

Reports printed in the Pittsburgh daily press that the Pittsburgh Steel Company has started up its plants at Monessen and Glassport full time, with orders for months ahead, are incorrect. C. E. Beeson, secretary, states that the open-hearth steel plant, rod and wire mills at Monessen and the hoop and band mills at Glassport are now running to a larger rate of capacity than for some time, but as yet orders do not permit the company to operate its plants full time.

The coal trade in the Pittsburgh district is looking better than for some months. Coal operators state they have received inquiries in the past week or two for 300,000 to 500,000 tons of coal. It is said that prospects for the development of foreign trade in coal are very good, as it is believed that the exports of England for at least a year or two will be small. The countries that were formerly supplied by England with coal will therefore look largely to the United States for their needs for some time. An obstacle in the development of this trade is the excessive freight rates, which are almost prohibiting shipments of coal to foreign countries.

At the annual meeting of stockholders of the James Lappan Mfg. Company, Pittsburgh, builder of heavy plate work, held in that city last week, John W. Exler, formerly secretary, was elected president, and James T. Lappan, secretary. These officials, with Moorhead B. Holland, John E. Laughlin and George W. Exler, form the board of directors.

Stockholders of the William B. Pollock Company, Youngstown, Ohio, builder of blast furnaces and heavy plate work of all kinds, met last week and elected directors as follows: Porter Pollock, Charles W. McClure, William G. Wilson, William W. McKelvey and John Kirby. The directors organized by electing Porter Pollock, president; Charles W. McClure, vice-president and general manager; William G. Wilson, secretary and treasurer; William W. McKelvey, general superintendent, and John Kirby, general foreman.

Testimonial Dinner to Dwight S. Guthrie

Dwight S. Guthrie, who has been manager of sales at Cleveland for the Republic Iron & Steel Company, and who has just been transferred to the company's Chicago office, was given a dinner at the Hollenden Hotel, Cleveland, Ohio, January 22, by a number of his friends associated in the iron and steel manufacturing industries in Cleveland. As a further token of esteem he was presented with a silver loving cup on which were engraved the names of those attending the dinner. S. D. Latty, president Kirk-Latty Company, acted as toastmaster, and several of the guests made remarks fitting to the occasion.

Among those present were C. F. Johnston and George F. Alderdice, respectively general sales manager and assistant general sales manager of the Republic Iron & Steel Company. Others were W. B. Topping, who has succeeded Mr. Guthrie in Cleveland; C. W. Scofield, Alfred B. Bower and Frank W. Davis, Lake Erie Iron Company; Henry Holt and George S. Case, Lamson & Sessions Company; G. E. Lucas, Cleveland Frog & Crossing Company; D. J. Champion and Henry Chisholm, Champion Rivet Company; Myles R. Ewing and F. M. McIsaac, Kirk-Latty Company; John C. Chandler, Lackawanna Steel Company; R. M. Kilgore, Jones & Laughlin Steel Company; J. D. W. Snowden, Cambria Steel Company; R. S. Hall, Bourne-Fuller Company; N. J. Clarke, Upson Nut Company; A. T. Merriman, American Steel & Wire Company; A. M. Foster and N. T. Jones, Foster Nut & Bolt Company; Charles Harbaugh and J. F. Harrison, Atlas Bolt & Screw Company; J. R. Mills and R. S. LeBarre, Carnegie Steel Company; William Smith, William Pattison Supply Company; Harold Alexander and J. E. Williams, National Screw & Tack Company, and F. E. Myers, F. E. Myers & Brother, Ashland, Ohio.

PERSONAL

Charles H. McCullough, Jr., vice-president and general manager of the Lackawanna Steel Company, arrived in Buffalo January 24 from a visit of seven weeks to England and France. He was accompanied on his foreign trip by H. C. Felver and other representatives of the Lackawanna Bridge Company. Mr. McCullough is quoted as saying to a local reporter that "when the European war ceases, although the end is not in sight, there will be an avalanche of orders for products of our steel mills." He believes that the mills abroad will be unable to cope with the demand which will be made upon them because of the lack of material and above all the scarcity of skilled men.

J. Frater Taylor, in addition to the presidency, has taken over the management of the Algoma Steel Company at Sault Ste. Marie, Ont., and has resigned the presidency of the Lake Superior Corporation. Thomas Gibson, for many years secretary, has been elected president of the latter company.

N. V. Hansell, of Hamilton & Hansell, 50 Church street, New York, sailed on Saturday, January 23, for Europe. He expects to visit England, Russia and the Scandinavian countries before returning to New York.

W. A. Viall of the Brown & Sharpe Mfg. Company, Providence, R. I., and president of the National Machine Tool Builders' Association, has returned from a business trip to England.

Albert C. Lehman, who has been vice-president and general manager of the Blaw Steel Construction Company, Pittsburgh, since its inception, has been elected president.

Axel Bonthron, representing Axel Ryden, Stockholm, Sweden, is making a tour of American works manufacturing machine tools. At present he is in New England and will go thence to Cincinnati and other centers of the Middle West.

William L. Neilson, manager of the German works of the Norton Company, Worcester, Mass., is passing a little time at the home office.

Stanley G. Morris, who has been connected with the Philadelphia sales office of the Carnegie Steel Company for the past five years, is now connected with the Philadelphia sales office of the Republic Iron & Steel Company. He will give his attention to Baltimore, Washington and the State of Virginia.

H. S. Stebbins, who has been connected with the iron-ore sales department of Oglebay, Norton & Co., Cleveland, Ohio, for 22 years, has resigned.

John Hoss, who has been connected with various firms making farm implements, has been appointed general sales manager of the Silver Mfg. Company, Salem, Ohio.

B. T. Steiner has retired as president of the Gilliam Mfg. Company, Canton, Ohio, with which he has been associated for more than 25 years, for the last 10 of which he was president. He retains his financial interest in the company. He has been succeeded by A. G. McKinley, Chicago, who will also act as treasurer. Other officers elected at the recent annual meeting are Joseph Glidden, Cleveland, first vice-president; C. M. Crane, second vice-president, and E. G. Stongstad, secretary.

Clay F. Lynch, whose appointment as general superintendent of the H. C. Frick Coke Company was noted in these columns last week, has been vice-president and general manager of the Bunsen Coal Company, Danville, Ill. He graduated in 1901 from Georgetown University, and since that time has been continuously connected with the operating departments of coal and coke companies associated with the Frick enterprises in the Pennsylvania, West Virginia and Illinois fields. He succeeds to the general superintendency of the Frick Company at the age of 34.

M. A. Sherritt, for several years associated with Manning, Maxwell & Moore, Inc., as manager of their Philadelphia branch, resigned on January 25 to become vice-president and general manager of the Sherritt & Stoer Company, Inc., dealer in machine tools, railroad and machine shop equipment. The new company will occupy offices in the Finance Building, Philadelphia, February 1.

Edward J. Kearney, president of the Kearney & Trecker Company, manufacturer of milling machines, West Allis, Wis., has been elected a director of the German-American Bank, Milwaukee.

David A. Wright, who for several years has been connected with the Yale & Towne Mfg. Company, New York, as district manager in the West, has opened an office for himself as manufacturers' agent, at 140 South Dearborn street, Chicago, Ill., specializing on labor-saving machinery, cranes, hoists, trolley systems and pneumatic machinery.

William Cairns has resigned as general manager of the Parish & Bingham Company, Cleveland, Ohio. W. D. Gemmill, who has been superintendent, has been appointed factory manager, and F. W. Vilmar has been appointed to the newly created office of sales manager. No changes have been made in the personnel of the company.

Charles R. Hook, general superintendent of the American Rolling Mill Company, Middletown, Ohio, gave an address on "The Relation of the Employer to Safety," at the Industrial Safety Exposition of Ohio, held in Columbus last week.

L. H. Mesker has been appointed representative in Ohio for the Kearney & Trecker Company, Milwaukee, Wis., manufacturer of the Milwaukee milling machines.

Col. H. P. Bope, vice-president and general manager of sales of the Carnegie Steel Company, will be one of the speakers at the Civic Association banquet at Sharon, Pa., February 4.

H. T. Hornsby, vice-president and general manager of the United Iron Works Company, Springfield, Mo., presided and delivered an address at a banquet Friday evening, January 15, at the Springfield Club, Springfield, Mo., in honor of the officials of the Frisco and Missouri Pacific railroads, 25 of whom were present. The keynote of the occasion was "A square deal to the railroads."

S. M. Marshall, formerly chief engineer of the Cambria Steel Company, has opened an office in the Swank Building, Johnstown, Pa., as consulting engineer.

Samuel Adams, formerly of Vandergrift, Pa., has been appointed night superintendent of the Farrell works of the American Sheet & Tin Plate Company, Farrell, Pa., succeeding J. J. Evans, who remains with the company in another capacity.

H. H. Vaughan, assistant to the vice-president of the Canadian Pacific Railway, Montreal, Que., and Isaac Harter, Jr., superintendent of the Babcock & Wilcox Company, Bayonne, N. J., have been appointed members of the sub-committee to work with the boiler code committee of the American Society of Mechanical Engineers.

Frederick S. Blackall, vice-president and general manager of the Taft-Pierce Company, Woonsocket, R. I., and Ralph E. Carpenter, the sales manager, are sailing this week for a business trip to England and France and possibly Russia.

E. W. Edwards, president Edwards Mfg. Company, Cincinnati, Ohio, made an address before the Cincinnati Business Men's Club on the evening of January 23, on the "Proposed Interurban Railway Terminal Station."

James A. Emery, general counsel of the National Association of Manufacturers, Washington, D. C., made an address at the Business Men's Club, Cincinnati, Ohio, on the evening of January 23.

A. C. Rulofson, who has long been a dealer in iron and steel products in San Francisco, has been appointed Pacific coast representative of the Pittsburgh Steel Company, manufacturer of wire rods, wire nails and wire, and will have his headquarters in the Monadnock Block, San Francisco.

Karl D. Williams, for a number of years assistant inspector of engineering material, Bureau of Steam Engineering, United States Navy, stationed at Chester, Pa., has taken a position with the Tindel-Morris Company, Eddystone, Pa., in that company's new department for manufacturing cylinders for shipping carbon dioxide, ammonia and blaugas.

Coke Workers' Wages Reduced

On Thursday, January 21, notices were posted at the coke plants of W. J. Rainey in the Connellsville region as follows: "Owing to the low selling price of coke and the fact that large independent interests in this region have recently effected wage reductions, the W. J. Rainey Company has been forced to revise its wage scale, which it is hoped will only be temporary. We have delayed as long as possible putting this reduction into effect, hoping that conditions would sufficiently improve to enable us to maintain the 1912 scale. By making this reduction we expect to continue operating practically all of our works at full time, thereby giving employment to the greater part of the men required for the normal operation, and who are to a great extent dependent upon us for their livelihood. Until further notice the company will operate under a scale which approximates that which prevailed in 1910."

On January 16, 1910, the H. C. Frick Coke Company, W. J. Rainey and other coke operators advanced wages to the basis in effect prior to a reduction made January 1, 1908. On April 1, 1912, these operators advanced wages about 7½ per cent., and this scale has been in effect since that time. The reduction announced by W. J. Rainey puts coke workers' wages back to the 1910 basis, as follows:

Mining and loading room and rib coal, per 100 bu.	$1.35
Mining and loading heading coal, per 100 bu.	1.50
Mining and loading wet heading coal, per 100 bu.	1.62
Drawing coke, per 100 bu., charged	0.78
Drivers and rope riders (shafts and slopes) per full run	2.60
Drivers and rope riders (drifts) per full run	2.55
Cagers, per full run	2.60
Tracklayers, blasters and timbermen (shafts and slopes) per day	2.60
Tracklayers, blasters and timbermen (drifts) per day	2.55
Assistant tracklayers and inside laborers, per day	2.00
Dumpers and tipplemen, per full run	2.00
Leveling, per oven	0.12½
Chargers, per oven	0.04½
Chargers, per day	2.00
Forking cars, 40,000 lb. capacity and less	1.65
Forking cars, 50,000 and 60,000 lb. capacity	1.75
Forking cars, over 60,000 lb. capacity	1.90

The prices for all other labor, regularly employed in the operation of the plants, will be proportionate with the above.

It is highly probable that other coke operators will make similar reductions.

La Belle-Wheeling Consolidation Revived

PITTSBURGH, PA., January 27, 1915.—(*By Telegraph.*)—The proposition to consolidate the La Belle Iron Works, Steubenville, Ohio, and the Wheeling Steel & Iron Company, Wheeling, W. Va., has again come up. It was informally discussed at a meeting of the La Belle board of directors in Steubenville on Tuesday, January 26, and a committee of three of the directors, comprising George Greer, W. H. Hearne and Alexander Glass was appointed to meet a similar committee of the Wheeling Company to discuss the proposed consolidation. This is the third time that the scheme has come up. Some months ago the Wheeling Steel & Iron Company took over the Wheeling Steel & Tin Plate Company, which has a large tin-plate mill at Yorkville, Ohio, near Wheeling.

The showing of the concrete buildings of the Edison factories in West Orange, N. J., which were overtaken by fire, as reported on at length in *The Iron Age* of December 17, is that 87½ per cent. of the reinforced concrete construction itself is in good order and that over 85 per cent. of the machinery in the reinforced concrete buildings could be salvaged. The salvage figure for the machinery was supplied to *The Iron Age* early in January by the Association of American Portland Cement Manufacturers after a number of investigations.

NEW CAMBRIA SALES MANAGER

J. L. Replogle Becomes Vice-President of the American Vanadium Company

Announcement has been made of the resignation of J. L. Replogle as vice-president and general manager of sales of the Cambria Steel Company to become vice-president and general manager of sales of the American Vanadium Company. He has been with the Cambria Steel Company for 26 years in various capacities, including the positions of superintendent of forge and axle departments, manager of orders, assistant general manager, assistant to the president, and for the last two years has been vice-president and general manager of sales. Mr. Replogle assumes his new duties March 1, with offices in New York and Pittsburgh, and on that date C. B. McElhany, who has been assistant general manager of sales, will succeed to the position of general manager of sales of the Cambria Steel Company. The general sales offices of the company are at Philadelphia, having been removed from Johnstown, Pa., a few months ago.

CHARLES B. MC ELHANY

Charles B. McElhany became connected with the Cambria Steel Company about three years ago, going from Pueblo, where he had been assistant general manager of sales of the Colorado Fuel & Iron Company. He has been identified with the commercial end of the wire business for some 20 years, at one time with President Donner of the Cambria Steel Company when the latter was at the head of the Union Steel Company. With the absorption of the wire plant of that company by the American Steel & Wire Company, he was identified for a time with the United States Steel Corporation, but 11 or 12 years ago joined the Colorado Fuel & Iron Company, where he remained until he went to Johnstown. He is a member of the American Iron and Steel Institute.

Coke Trade Failures

Following the failure of the First National Bank of Uniontown, Pa., and the appointment of a receiver for J. V. Thompson, the well-known coal and coke operator, the Tower Hill-Connellsville Coke Company and the Tower Hill Supply Company have gone into the hands of receivers. The assets of the coke company are given as $3,500,000, with liabilities of $3,000,000; its assets consist of 300 acres of undeveloped coal and 182 acres of surface coal, also machinery, coke ovens and 150 houses for miners. The supply company has reported assets of $120,000 and liabilities of $40,000. As a result of the J. V. Thompson failure, a receiver was appointed for I. W. Semans, largely identified with the coke trade, and a business associate of Mr. Thompson. The assets of Mr. Semans are given as $8,000,000 and his liabilities as $2,800,000.

AN EXTRA SESSION FORECAST

Congress Faces Necessity of Revenue Legislation, Because Deficit Grows

WASHINGTON, D. C., January 26, 1915.—The developments of the past week have convinced the Congressional leaders of both parties that a special session of Congress, to be called soon after March 4 next, cannot be avoided, and the reorganization of the House, which will be perfected by the opening of the new session, is already well under way. The majority members will hold a caucus February 4 for the purpose of reorganizing the committees in accordance with recommendations to be made by the Ways and Means Committee and circular letters have been sent out to all members who have been re-elected requesting them to advise the committee as to preferences in the way of committee assignments. New members will probably not be assigned until the beginning of the new session.

It is now generally admitted that revenue legislation will have to be undertaken at the new session for the purpose of extending the emergency war revenue act for at least a year after its expiration on January 1, 1916, and possibly to repeal the provision of the Underwood-Simmons act placing sugar on the free list after May 1, 1916. Whether general tariff legislation will be undertaken remains to be seen. In view of the fact that the Ways and Means Committee will certainly have some work before it, its reorganization is being followed with much interest, and an effort will be made by the Republican leaders to increase their membership on this committee on the ground that the Republican representation in the new House will be much larger than in the present House and should be reflected in the make-up of all committees. The Ways and Means Committee now consists of 21 members, of whom 14 are Democrats, 6 Republicans—including the vacancy recently caused by the death of Representative Payne, of New York—and one Progressive. The Republicans contend that they should have at least 8 places on the committee, including that now held by the representative of the Progressives, whose membership in the next House will be so small as to be negligible. This would still leave the Democrats with 13 members, or a majority of 5.

The probability of revenue legislation is greatly increased by the developments of the past two or three weeks. At the beginning of the present calendar year there was a deficit for the fiscal year to date of $62,000,000 in round figures, but the prediction was then made that this would be speedily recouped as the result of collections under the emergency revenue act, which it was calculated would produce $80,000,000 per annum, or about $6,500,000 per month. Notwithstanding these predictions, the deficit has increased to nearly $70,000,000, and an examination of the internal revenue reports shows that the total gain to date over the receipts up to the corresponding date a year ago is less than $3,500,000. All the provisions of the emergency revenue act did not take effect until December 1, but part of them went into force in October and another part in November, and as the experts calculate that it now has been in force the equivalent of two full months it is apparent that instead of producing at least $13,000,000 it has yielded only about one-fourth that amount.

Reports from special agents engaged in income tax work are discouraging the Treasury officials, as they foreshadow a heavy reduction in national income from this source, due to the depressed conditions throughout the calendar year 1914 just ended, upon which the payments to be made during the remainder of the present fiscal year will be based. The indications now are that the combined receipts from individual and corporate income taxes will fall at least $15,000,000 below the estimates.

Secretary McAdoo and his aides of the Treasury Department are greatly annoyed at the refusal of Representative Underwood, the majority leader of the House, to undertake the passage at the present session of a resolution cutting off the ten days of grace after July 1 next, during which delinquent income tax payers may make their payments without incurring penalty. Mr. McAdoo believes that many millions of dollars will be withheld until the last moment and paid during the period between July 1 and July 10. Such payments, of course, will not figure in the receipts for the fiscal year ending June 30 next, and the prospective deficit will be increased. Mr. Underwood has told the Secretary that the introduction of the desired resolution would precipitate a tariff discussion that could not be controlled and has declined to assume the responsibility in the matter. His refusal emphasizes the critical legislative situation and serves greatly to increase the probability that the revenue question will be considered at length at the extra session.

W. L. C.

The Kennedy-Stroh Corporation

Plans have been completed for the organization of the Kennedy-Stroh Corporation, Pittsburgh, which will take over the plants of the Best Mfg. Company at Oakmont, near Pittsburgh, the Stroh Steel Hardening Process Company, the Lawrence Steel Casting Company, Pittsburgh, and all the rights, processes and factories of the Kennedy Mfg. & Engineering Company, New York City.

The Best Mfg. Company is the largest of these interests, having an extensive plant for the manufacture of power piping, flanges, fittings and valves, occupying the buildings erected several years ago by the Crane Company of Chicago, but which the latter never used. For several years a good part of the output of steel castings of the Lawrence Steel Casting Company has been taken by the Best Mfg. Company. The Stroh Steel Hardening Process Company has no works but has a method of casting two kinds of steel in one solid casting in such a manner that the hard alloy comes only on the part that is subjected to wear. The Kennedy Mfg. & Engineering Company is engaged in the manufacture and erection of mining and crushing machinery, a specialty of the company being heavy gyratory crushers; it also builds complete cement-making, crushing and mining plants, while its engineering department prepares plans for the building of such plants.

The Kennedy-Stroh Corporation has a capital stock of $1,600,000 and bonds of $750,000. Officers have been elected as follows: W. H. Schoen, president; J. E. Kennedy, vice-president and chief engineer; J. L. Kendall, treasurer; J. D. Hiles, secretary, and W. I. Stroh, general manager and metallurgist. Sales will be handled by C. Lee Straub and H. A. Johann for the Kennedy department; John M. Sherard and O. L. Mills for the Stroh department; B. Floersheim and J. W. Prenter for the Best department, and W. H. Green for the Lawrence department. The central plant of the new company will be at Oakmont, where extensive additions are already under way. These include the erection of two open-hearth furnaces; the extension of the foundry building on a site between the old buildings and the Allegheny River; and the introduction of much heavy machinery, for the building of cement crushing and other equipment under the Kennedy designs. It is stated that the company already has orders for more than $1,000,000 of its products.

Mansfield Sheet Mill Started

The plant of the Mansfield Sheet & Tin Plate Company, Mansfield, Ohio, was placed in operation January 15. Since this plant was acquired by its present owners, a few months ago, it has been very generally overhauled and converted into an up-to-date sheet-making plant. In addition to other improvements a 2000-hp. Mesta Corliss mill engine, with rope drive transmission, has been installed. The plant is equipped with six sheet mills and foundations are put in for an additional stand of rolls. W. H. Davey is president and general manager.

The Kilby Mfg. Company, Cleveland, Ohio, has just shipped to Cuba a large sugar evaporator having a capacity of evaporating 2000 tons of cane per day. The machine, which is known as a quadruple effect evaporator, weighs 453,000 lb. It has 65,000 lb. of copper tubes, the remainder being mostly cast iron.

Machinery Markets and News of the Works

The feature of the markets and one which gives great encouragement is a noticeable improvement in domestic demand. It comes from scattered and varied sources and large transactions are few, but the trade at large is unquestionably stimulated by the awakening. In New York export sales lead in volume and there are good prospects, both domestic and foreign. In New England improvement apart from the war business is noted. Detroit reports a fair demand for standard equipment for domestic consumption; the foreign demand being less in evidence. The volume of inquiries and orders has increased in Cleveland, where large orders have been placed. Cincinnati has received many orders from Eastern manufacturers who are filling orders for export, but planers and shapers continue in poor request. In Chicago more interest on the part of machine-tool users is noted and the sold-up condition of the builders is expected to prove beneficial to the dealers. There is no break in the demand for single tools in Milwaukee where the agricultural implement makers and automobile factories are keeping the foundries busier. In the Central South there are more live prospects, but they are closed with difficulty. Machinery is in better demand in the Birmingham territory, collections are easier and a slow but sure recovery is looked for. The machine-tool market in St. Louis shows improvement of a general sort. The better situation in cotton in Texas is having a good effect. Business is quiet in San Francisco where orders are limited to small tools for immediate delivery. In the Pacific Northwest the activity in shipping ıber and grain abroad is stimulating industry.

New York

NEW YORK, January 26, 1915.

Reports of sales which, while not large, are nevertheless pleasing and of several good prospects continue to create a better feeling in the machinery trade, though there is still room for improvement, especially in some directions. The railroads continue to be poor buyers. The foreign demand is responsible for a large part of the activity. Through a company with foreign agencies a very good business has been done in turret lathes, engine lathes, drilling machines and grinders, probably 400 machines, all told, having been bought in the week. They are for shipment principally to England and France, though Switzerland is taking some too. Deliveries are poor, because of the pressure on machine tool builders who make the required types of machines.

While it is considered reasonably certain that contracts for shrapnel which Russian agents sought to place here in recent months have gone to other countries, it is believed that another and similar inquiry may be received here. A new Russian representative is now in this country. The buying by Russia of 40,000,000 lb. of copper and of a great deal of spelter, for shipment to Japan, is regarded with interest, and in this connection it is noted that at least two Japanese exporting houses in this city have been inquiring for machine tools.

It is understood that the submarines which were to be built by the Fore River Shipbuilding Corporation and the contract for which was relinquished at the request of the United States Government are to be built at the shipyard of Canadian-Vickers, Ltd., Montreal. This plant was originally founded for the purpose of creating a navy for the Dominion of Canada.

New York dealers have done a fair business in second-hand machines.

The Bierman-Everett Foundry Company, Irvington, N. J., has bought a plot of land on Glorieux street and March 1 will begin the erection of a foundry building, 60 x 200 ft. The company specializes in small gray iron castings and oxy-acetylene welding supplies, also electrical boxes and supplies, and its business has outgrown its present plant.

The board of education of Orange, N. J., has an inquiry out for about 15 machine tools for a manual training school. Most of the tools wanted are lathes, and in view of the scarcity of these machines delay may be encountered in their purchase.

The Allied Machinery Company of America, 55 Wall street, New York, has moved its offices to larger quarters at the same address.

The Turner Construction Company, 11 Broadway, New York City, has been awarded the contract for the erection of two additional stories on the reinforced concrete factory of the Doehler Die Casting Company, 187 Ninth street, Brooklyn, N. Y. The present building is a four-story structure, 45 x 100 ft., and the addition will add 50 per cent. to the floor space. Work will be commenced at once.

Leon Mayer, Inc., 1 Bridge plaza, Long Island City, N. Y., has awarded the contract for the erection of a two-story laundry, 40 x 100 ft. He is in the market for special equipment, shafting, boilers, engine, etc. The total investment will be about $30,000. John Welden, 1 Bridge plaza, Long Island City, will erect the building.

The Eagle Pipe Supply Company has moved its offices to 45 Broadway, New York City.

The Heller & Merz Company, Hamburg place, Newark, N. J., manufacturer of coloring matter, will build an extension 70 x 200 ft., of brick and steel, at a cost of $18,000.

The plant of the Combination Vendor Company, Penn Yan, N. Y., manufacturer of vending machines, which was damaged by fire January 10, is to be rebuilt at once.

The Pierce, Butler & Pierce Mfg. Company, 282 James street, Syracuse, N. Y., has commenced work on the construction of a pattern foundry and warehouse at Eastwood, N. Y. The Onondaga Structural Steel Company, Syracuse, has the contract for the steel work.

The Crescent Tool Company, Jamestown, N. Y., of which Karl Peterson is president, has had plans completed for a brick and steel addition to its plant, 50 x 160 ft., three stories and basement, to be erected at an estimated cost of $55,000.

The Johnson Harvester Company, Batavia, N. Y., has increased its capital stock from $2,000,000 to $2,250,000.

The Ross Food Company, Buffalo, which had made partial arrangements for building its factory in Buffalo, has purchased a factory on Walnut street, Batavia, N. Y., and will remodel and equip it for the production of cereal food products. Andrew Ross, Bank street and Washington avenue, Batavia, is president.

The works of the Lane Bridge Company, Painted Post, N. Y., was purchased at bankruptcy sale January 23 by the First National Bank, Corning, N. Y., for $7000. The appraised valuation of the plant was $35,000.

Jacob Moschel's Sons, 153 Peckham street, Buffalo, have let contract for erection of a boiler house, 36 x 48 ft.

The Mansfield Milling Company, Lockport, N. Y., has been incorporated with a capital stock of $100,000 to manufacture flour and cereal products. H. M. & L. T. Whitbeck, Lockport, and P. V. Chadsey, Salina, Kan., are the incorporators.

George E. Worth, superintendent of the Pennsylvania Feldspar Company, Barnard, N. Y., will receive bids until February 2 for the erection of a three-story mill, 70 x 70 ft., of steel and concrete construction.

The capital stock of the Papec Machine Company, Shortville, N. Y., has been increased from $150,000 to $300,000.

Plans have been completed and bids will soon be taken by Alfred Freeman, architect, 29 West Thirty-fourth street, New York City, for an addition to the factory of A. R. Mosler & Co., Wakefield and Webster avenues, Mt. Vernon, N. Y., manufacturers of spark plugs.

Bids are being taken by the Delaware & Hudson Company, Albany, for a 40-ton hand crane for its shops at Albany.

The W. N. Clark Company, Rochester, N. Y., will build a two-story addition, 84 x 207 ft., to its canning factory, Norton and Hollenbeck streets, at an estimated cost of $50,000.

The Heliclox Tire Company, 2 Rector street, New York, has been incorporated with a capital stock of $100,000 by L. E. Maginn, S. W. Rogers and T. H. Soule. It plans to test machinery and metal specialties before placing them upon the market, and at the present time will not purchase any ma-

chinery or materials of any character. T. H. Soulé is manager.

The W. O. Hickok Mfg. Company, Harrisburg, Pa., plans to call for bids for its new manufacturing plant on or about March 1. Day & Zimmerman, 611 Chestnut street, Philadelphia, are the engineers.

Fire did $15,000 damage to the electrical department of the Harrisburg Pipe and Pipe Bending Company, Harrisburg, Pa., January 21. A number of reserve motors were damaged.

It is reported that the E. I. Dupont de Nemours Powder Company, Wilmington, Del., has taken an option on the machine shop of the J. Morton Poole Company, Wilmington, which is one of the largest in the city, but has not been operated for a long time. It will probably be used for the construction of powder making machinery.

New England

BOSTON, MASS., January 26, 1915.

Some improvement is reported by the builders of machine tools, apart from the business that can be traced directly or indirectly to the war. A railroad in the Middle West has out a list of machine-tool requirements, and at least one manufacturer of drop forgings promises to come into the market, while inquiries are more numerous generally. There is more demand for planers. One New England house has sold several goodly lots of smaller sizes of planers in the past few weeks. As for engine lathes, the supply is about exhausted. Purchases for foreign shipment continue, and the same is true of those types of automatics that are needed for the manufacture of ammunition, especially shrapnel. Grinding machines for the same purpose are being sought actively. Builders of motor trucks are factors in the machinery trade, and still more so in the market for the thousand and one articles that enter in one way or another into their product.

In Waterbury, Conn., and other points of the Naugatuck Valley, a slight improvement in general manufacturing business is observable. The big brass mills are operating unevenly, some departments running overtime while others are dull, the average not being up to normal, but things are better than they were a while ago. A large proportion of the business is for brass which enters in one way or another into supplies for foreign armies. Little new building construction is planned. The Pilling Brass Company is erecting an addition which will increase its works in a large ratio. The newly organized National Company is occupying its factory and is manufacturing small sizes of brass tubing, and is moderately busy.

The machinery manufacturers of Waterbury and vicinity are running quite full, but not so much on standard types as on special machines. Many of these enter into the manufacture of war materials, not a few of them in unusual and interesting ways, but the owners are not willing that publicity be given their exact character.

The Wallace Barnes Company, Bristol, Conn., manufacturer of springs, has awarded the contract for a rolling-mill building which will be located between Bristol and Forestville, at a point known as Davitt's Crossing. The structure will be 80 x 160 ft. The company proposes to roll spring steel, which constitutes the raw material for the product of the Bristol factory, but the details of the plans are not yet completed. The new plant will be in operation in the late summer.

The Pratt & Whitney Company, Hartford, Conn., is occupying a considerable portion of the Pope Mfg. Company works, the deeds for which have just been passed. Large purchases of machine tools and other equipment have been made to equalize manufacturing in the combined properties. At present the company is employing 1900 men, and the expectation is that the force will be increased to 2500 within a fortnight. In addition to its own shop facilities a number of outside shops in Hartford and elsewhere are doing work for Pratt & Whitney.

The Fenn Mfg. Company, Hartford, Conn., has been organized as a copartnership between W. L. Fenn and Wilson A. Fenn, and has established shops in the building at 516 Asylum street, recently occupied by the Dwight Slate Machine Company. The company will design and build special machinery, tools, models, etc., and will make a specialty of cutting gears of all types, a variety of machinery for the purpose having been installed. W. L. Fenn returns to the special line in which he was engaged previous to establishment of the Taylor & Fenn Company, from which he and his son, Wilson A. Fenn, have now retired. The latter has specialized on the development of special machinery as well as in shop management.

The City Council, Lowell, Mass., has voted $225,000 for the construction of a filtration plant and $40,000 for sewer construction.

Chicago

CHICAGO, ILL., January 25, 1915.

In the machinery trade there appears to be about the same degree of improvement and reawakening of interest upon the part of machine-tool users as has been noted with respect to iron and steel manufacturers generally. A more animated tone is reflected in the inquiry at hand, which, although emanating from scattered sources and less plentiful than might be desired, is usually the forerunner of orders for early placing. One feature of the situation which operates to the special advantage of the dealers arises out of the sold-up condition of a number of the tool builders; orders which would otherwise go through direct channels to the factory are being placed wherever there seems to be a chance of a tool ready for shipment from dealers' stocks. A Western builder of turret lathes has received another attractive order for export.

The American Snuff Company, Memphis, Tenn., is in the market for a shaper, a planer, a lathe and a universal miller.

The S. & S. Automatic Grate Company, Chicago, has increased its capital stock from $15,000 to $60,000, and the number of its directors from three to five.

The Spencer Otis Company, Railway Exchange Building, Chicago, has now been incorporated with a capital stock of $75,000. It will continue to manufacture railroad equipment and supplies. Edward A. Grams, Abner J. Stillwell and O. Guernsey Orcutt are the incorporators.

The Warner Forge & Machine Company, Chicago, has been incorporated with a capital stock of $6000 to operate a forge and machine shop. The incorporators are John L. Pearson, 29 South LaSalle street; Walter D. Herrick and L. M. Brenner.

The Rex Typewriter Company, Chicago, has been incorporated by W. E. Heilman, C. Paul Parker and Ernest J. Andrews, 53 West Jackson boulevard, with a capital stock of $800,000, to manufacture typewriters.

The Grau Special Ford Shock Absorber Company, Chicago, has been incorporated with a capital stock of $1500 to manufacture shock absorbers. Otto C. Walther, 3851 North Springfield avenue; Herman Grau and W. E. Thomas are the incorporators.

The Andrews Engineering Company, 647 Peoples Gas Building, Chicago, has been incorporated by J. B. Strauss, Wesley W. Hawley and Martin Andrews, with a capital stock of $10,000, to make bridge operating machinery, iron and steel castings, etc.

The Shippers Refrigerating Car Company, Chicago, has been incorporated with a capital stock of $500,000 to manufacture railroad cars, locomotives and other rolling stock. The incorporators are Henry H. Phillips, I. J. Horne and Oscar Anderson. The company is represented by Pain & Hurd, Rookery Building.

The Winslow Safety Boiler Company, Chicago, has been incorporated with a capital stock of $5000, to manufacture boilers, power machines, engines, motors, etc. Roy O. West, Percy B. Eckhart and Thomas G. Deering, 38 South Dearborn street, are the incorporators.

The E. T. Perkins Engineering Company, First National Bank Building, Chicago, will receive bids until February 19 for the erection and equipment of a pumping station for Quincy, Ill.

The Imperial Tool Company, Bloomington, Ill., which was recently incorporated with a capital stock of $300,000, expects to open its plant and start operations some time in March. It will manufacture a line of tools for carpenters, pipe fitters and other mechanics.

The Briggs Automatic Gate Company, Hoopeston, Ill., has been incorporated with a capital stock of $5000 to manufacture engines, machinery, railroad crossing gates, etc. The incorporatorr are C. M. Briggs, Jay Briggs and Walter T. Gunn.

The Central Garage of LaSalle, LaSalle, Ill., has been incorporated with a capital stock of $50,000 to do an automobile and garage business. L. B. Stever, Louis Klee and E. S. Schurr are the incorporators.

The Quick Attachable Fence Post Company, Tremont, Ill., has been incorporated by Walter C. Stuber, William Pfiederer and John Stuber, with a capital stock of $2400, to manufacture quick attachable fence posts.

The Kewanee Corn Hanger Company, Kewanee, Ill., has been incorporated with a capital stock of $75,000 by B. F. Baker, W. D. Glidden and R. B. Glidden.

The Peoria Tractor Company, Peoria, Ill., has been incorporated with a capital stock of $60,000 by George McFarland, C. F. Loomis and E. M. Smith.

The board of trustees of East Peoria, Ill., will receive bids until February 8 for the erection of a standpipe and pumping station for the waterworks department.

The Machinery Specialty Company, Joliet, Ill., has been incorporated with a capital stock of $10,000 to manufacture and deal in steel, iron and other metals. Louis B. Mather, Henry J. Bates and Nina Bates are the incorporators.

The plant of the Acme Mfg. Company, Port Madison, Iowa, is nearing completion and the company expects to start operations at an early date.

The Globe Machinery & Supply Company, Des Moines, Iowa, plans to build soon on East Second street.

Fire recently did some damage to the Trenk Wire Works at Dubuque, Iowa.

The Wrought Iron Heating Company, Des Moines, Iowa, has ordered approximately $25,000 worth of machinery for its new plant at Ninth and Murphy streets. It already has orders for about 2200 furnaces.

The Reed Self-Adjusting Weather Strip Company, Wichita, Kan., will build a factory which will cost approximately $25,000.

The Fergus Falls Brewery Company, Fergus Falls, Minn., has entered into a contract for machinery and will install a modern ice-making plant.

Burrton, Kan., will issue $20,000 in bonds for the purpose of installing a waterworks.

The Electric Light & Water Commission, Winfield, Kan., will advertise shortly for bids for a 500-kw. electric generating unit. W. J. Welfelt is superintendent.

Milwaukee

MILWAUKEE, WIS., January 25, 1915.

A fair amount of local business is in sight for local tool builders as the result of the determination of a number of machinery producers to make extensions and replacements in the early months of the year. In most cases the purchases are for urgent replacement, and business resulting from projected extensions is not an important factor. The past week the monotony of small or single tool orders has not been broken, although builders report a slight improvement in business, which is expected to be accelerated henceforth. Municipal buying for electric light and waterworks extension and re-equipment is developing. Not much is in sight for fabricators and erectors; but a fairly good demand for reinforcing bars and structural material to be dealt out in small dabs is certain to present itself as the season advances. Foundrymen are in an improved position on agricultural and automobile business.

The Medford Electric Company, Medford, Wis., is contemplating the erection of a new power house and purchase of additional equipment to provide for 24-hour service.

The Milwaukee Steel Type & Die Company, Milwaukee, has been incorporated by A. C. Moeller, Fred R. Scheiner and Emmet Horan, Jr., attorney, with a capital stock of $20,000.

A general repair shop will be opened by Kotil Brothers, Green Bay, Wis., and they expect to be ready for business in a few weeks.

Articles of incorporation have been filed by the Boggis-Dietz Electric Company, Milwaukee, with a capital stock of $10,000, by H. F. Boggis, E. Boggis and E. L. Dietz.

The Milwaukee County board of supervisors, Milwaukee, has decided to establish a garage and machine shop in connection with the county charitable and penal institutions in Wauwatosa to care for all automobile and general machinery repair and reconstruction work. Formal bids will be called for later on equipment, etc. Louis G. Widule is county clerk.

The Federal Rubber Mfg. Company, Milwaukee, which is making improvements valued at $500,000 to its tire and rubber works in Cudahy, Wis., has increased its capital stock from $2,000,000 to $3,000,000. B. C. Dowse is president.

The J. I. Case Threshing Machine Company, Racine, Wis., has purchased the plant of the former Fish Brothers Wagon Company, out of business for several years, and will utilize it for manufacturing and warehouse purposes.

The Madison Gas & Electric Company, Madison, Wis., has received authority from the Wisconsin railroad commission to increase its capital stock in the sum of $650,000 to provide for extensions and improvements of a miscellaneous nature.

The Burlington Brass Works, Burlington, Wis., operating a foundry and machine shop, has increased its working force to take care of the rush of orders for plumbing and steam-fitting goods and material.

C. E. Blodgett, Marshfield, Wis., who is erecting a wholesale grocery, is having plans prepared for a cold storage plant with a capacity of 300 cars. The building will be four stories high, 50 by 60 ft., and will have a full equipment of refrigerating machinery, elevators and electric motors.

Detroit

DETROIT, MICH., January 25, 1915.

Conditions in the local machinery market have changed but little from those reported last week. A fair demand is found for equipment of standard lines, but buying is from scattered sources and there were no large purchases. No new foreign purchases of machine tools are reported. In special equipment a good demand for small electric motors is reported, and power plant machinery is somewhat in request. Financial conditions are improving slowly and the outlook is conceded by everyone to be encouraging. The Detroit automobile show held last week was a great success and motor car manufacturers are quoted as being well pleased over the outlook for this industry for the year. Weather conditions are such as to discourage construction work and very little is being done in this line.

The George B. Essex Brass Company, 480-484 Franklin street, Detroit, suffered a severe loss by fire January 22. Damage to the plant and equipment is estimated at about $20,000.

Francis E. Hatch, Detroit, has acquired an electric lighting plant at West Branch, Mich., and will remodel and improve it at a cost of $30,000.

The Retlaw Accessories Company, Detroit, has been incorporated with $5000 capital stock to manufacture automobile accessories. C. C. Davis, Walter I. Oeschger and Ray A. Pyle are the incorporators.

Frank W. Blair, president Union Trust Company, Detroit, has been appointed trustee in bankruptcy for the Krit Motor Car Company, automobile manufacturer.

The Pontiac Motor Castings Company, Pontiac, Mich., has increased its capital stock from $15,000 to $35,000, and changed its name to the Pontiac Motor Castings & Mfg. Company.

The plant of the Summers Linen Company, Port Huron, Mich., which was recently destroyed by fire, will be rebuilt at once on a larger scale. Considerable equipment will be required.

Redford, Mich., will receive bids until February 1 for material for the construction of a waterworks system. John Venus is Village Clerk.

The Multiple Tool Company, Grand Rapids, Mich., has been incorporated with a capital stock of $50,000 by Claude Hurd, Frank T. Hulswit, Richard Shaddelee and H. R. Green. It will manufacture a combination forge, anvil, lathe, drill press and other metal-working tools to be operated either by motor or hand power.

Cleveland

CLEVELAND, OHIO, January 25, 1915.

The volume of machinery business placed in this territory the past week showed considerable improvement. Inquiry has also increased. The general run of small orders received by dealers shows little change, although a moderate volume of single tool business is coming out. The Massillon Rolling Mill Company, Massillon, Ohio, has purchased considerable machine-shop equipment. Its inquiry for about 15 large machines has been pending for a month. An order placed with the Cleveland Punch & Shear Works Company by the Bethlehem Steel Company, for $25,000 worth of machinery for use in the fabrication of structural steel which was placed last summer, and held up when the war was declared, has been released. The foundry situation continues quiet.

The Cleveland office of the Niles-Bement-Pond Company has taken orders for several large machines, including orders for two of its newly designed boring mills.

The Buckeye Brass & Mfg. Company, Cleveland, has taken a large order for bronze bearings for shipment to Canada and to be used in building field provision cars for the English army.

The Enterprise Aluminum Company, Massillon, Ohio, recently incorporated with a capital stock of $50,000, has established quarters in the galvanizing department of the Massillon Rolling Mill Company and is engaged in the manufacture of aluminum cooking utensils. It will occupy quarters in the plant of the American Stamping & Enameling Company when that company's new plant is completed, and eventually expects

to build a new plant. The Enterprise Company is closely allied to the other two companies.

The Gramm Motor Truck Company, Lima, Ohio, will be reorganized under the direction of the Geiger-Jones Company, industrial bankers, Canton, Ohio. The latter company has acquired the interest of J. N. Willys, of the Willys-Overland Company, Toledo, who has severed his connection with the motor truck company.

The plant of the Suspension Roller Bearing Company, Sandusky, Ohio, will be sold at public auction February 17, by E. S. Stephens, receiver.

The Farrell-Cheek Foundry Company, Sandusky, Ohio, has awarded a contract for an addition to its plant, which will about double its present capacity.

A new steel fabricating plant, 60 x 160 ft., will be erected in Bellevue, Ohio, by the Klein Iron & Steel Company, which will succeed to the business now conducted by Carl Klein. W. L. Willing and C. W. Burk will be associated with Mr. Klein in the new company, which will be incorporated with a capital stock of about $15,000.

It is announced that the Hope Engineering Company, the Hammond Coupler Company and the Hope Forge & Machine Company, three allied interests, will move their offices from Pittsburgh to Mt. Vernon, Ohio, and that $30,000 worth of new machinery will be added to their plants in Mt. Vernon. A new office building will be erected.

The Little Giant Starter Company, Canton, Ohio, has been incorporated with a capital stock of $10,000 by E. D. Myers, J. R. Binns, W. L. Vance, and others.

The Wheeling & Lake Erie Railroad Company plans the erection of a $5000 ice making plant at Brewster, Ohio.

The Banting Mfg. Company, Dorr street, Toledo, Ohio, has been incorporated with a capital stock of $400,000 to manufacture steam engines and threshing implements. C. C. Banting and others are the incorporators.

The plant of the Lewis Brothers Mfg. Company, makers of interior hardwood finish, including doors, grill work, etc., will be moved from Rockford, Ohio, to Lima, Ohio, where a new plant will be erected on a plot, 100 x 200 ft.

Cincinnati

CINCINNATI, OHIO, January 25, 1915.

A noticeable improvement has set in in domestic business according to reports by several local machine-tool builders. The majority of orders are, however, from Eastern manufacturers who have orders in hand for war supplies. Lathes continue to head the list, with milling machines also in demand. Both planers and shapers are in poor demand, and only a fair call is found for drilling machines. The export trade is still good, but the question of delivery on medium sized lathes has doubtless been the cause of holding up a number of orders on which inquiries for prices were put out some time ago.

Both skilled and common labor is plentiful, the supply being greater than the demand from any one industry. The second-hand machinery business is very dull, and only a limited number of deals are under negotiation. Strange as it may seem, several inquiries for electric generating outfits have been received lately from the South. Hardware merchants who carry a line of machinists' and foundry supplies report a marked improvement in business, that was especially noticeable last week.

The Black Diamond Mfg. Company, 1215 Bank street, Cincinnati, has had plans prepared for an addition to its plant that will be 30 x 50 ft., one story, of brick construction.

The Gruen Sons Company, watch manufacturers, Johnston Building, Cincinnati, expects to commence construction of a new plant estimated to cost $50,000. Machinery equipment details are not yet available.

The Butt Joint Nestable Culvert Company, Cincinnati, has been incorporated with $50,000 capital stock and will fit up a plant at 826-828 Reedy street to manufacture a patented nestable culvert. Considerable metal-working machinery will be required. J. J. Grau, Union Central Building, is one of the stockholders.

In order to conserve its interests a friendly suit was instituted against the Hamilton Machine Tool Company, Hamilton, Ohio, and Brandon Milliken has been appointed receiver of the company. As the company now has a large number of export orders on its books it is expected that the receivership will be lifted at an early date.

The Portable Garage & Construction Company, Columbus, Ohio, has been incorporated with $5000 capital stock by B. H. Thompson and others. Nothing is known as to machinery requirements.

Power plant and refrigerating equipment will be required by the Lindner Brothers' Sanitary Milk Company, Dayton, Ohio, for a contemplated addition to its plant on East May street.

It is rumored that the Mead Engine Company, Dayton, Ohio, contemplates erecting an addition to its plant.

The Vaile-Kimmes Company, manufacturer of small waterworks' outfits and plumbing specialties, Dayton, Ohio, has tentative plans under way for a new factory.

The Dayton Pure Milk & Butter Company, Dayton, Ohio, expects to construct an addition to its plant, for which refrigerating and other equipment will be required.

The proposed addition to the plant of the Kelly-Springfield Motor Truck Company, Springfield, Ohio, recently mentioned, will be 50 x 250 ft., one story, of reinforced concrete construction.

Moorehead & Earehart, Portsmouth, Ohio, a new partnership, have opened a foundry and machine shop at 1233 Ninth street.

The Vulcan Last Company, Portsmouth, Ohio, expects to install additional machinery to increase the output of its plant.

The Dais Paving Block Company, Athens, Ohio, has had plans prepared for a large creosoting plant. Jas. E. Fox is one of the principal stockholders.

Indianapolis

INDIANAPOLIS, IND., January 25, 1915.

Fire destroyed the foundry of the American Rotary Valve Company, manufacturer of motors and vacuum cleaning machinery, Anderson, Ind., January 20, with a loss of about $15,000.

The report that the machine shops of the Lake Erie & Western Railroad Company at Tipton, Ind., were destroyed with a loss of over $50,000 is incorrect. The buildings were damaged to the extent of only $500, and the machinery loss was about $1500.

The Zimmerman Buggy Company, Auburn, Ind., has been incorporated to manufacture vehicles, automobiles, etc. It is operating the plant of the Zimmerman Mfg. Company, and is not in the market for equipment at present. John Zimmerman is general manager.

The Winslow Government Standard Scale Company, Terre Haute, Ind., has been incorporated with $50,000 capital stock to manufacture railroad scales. The directors are Marion H. Winslow, I. M. Winslow and George M. Miller.

The Hester Litter Carrier Company, Ft. Wayne, Ind., has been incorporated with $5000 capital stock, to manufacture litter carriers. H. B. Hester, L. S. and A. C. Gladieux are the incorporators.

The Indiana Specialty Mfg. Company, Angola, Ind., has been incorporated by S. C. Wolfe, R. E. Willis and W. W. Love, with $10,000 capital stock to manufacture metal and other specialties.

The Sheet Metal Specialty Company, Goshen, Ind., has increased its capital stock from $10,000 to $35,000.

The Winona Electric Light & Water Company, Warsaw, Ind., will build a motor-driven pumping station.

E. A. Skinner has been appointed receiver for the Ideal Steel Wheel Company, Elkhart, Ind.

The Shawnee Mfg. Company of Indiana, Attica, Ind., has been incorporated with a capital stock of $20,000 to manufacture agricultural tools. The incorporators are J. M. Washburn, J. A. Spangler and C. A. Lyons.

The Central South

LOUISVILLE, KY., January 25, 1915.

Machinery concerns report that the number of prospects is satisfactory, but that closing continues to be extremely difficult. Several reports were current of large additions to manufacturing plants, planned in great detail as to the cost of equipment, which were abandoned for the time being on account of uncertain conditions. The past week, however, has brought more live prospects to the front than for some time, and a corresponding increase in business is looked for. Manufacturing enterprises are relatively more numerous than building work requiring machinery, a condition which is in sharp contrast with the situation several months ago. Difficulty in financing building operations is probably responsible for this.

The sale of the interest of the estate of L. P. Ewald in the Ewald Iron Company, Louisville, to R. Bayler Hick-

man and others has been approved by the local courts, and is now being completed. Philip Ewald, son of L. P. Ewald, retains his personal interest. The sale is to be followed by extensive improvements in the property, it is understood.

B. P. Wooten, Hazard, Ky., and others, have purchased the franchise and property of an electric light plant and are considering installing generating equipment.

Bids will be received at once by the Marion Water & Ice Company, Marion, Ky., for the construction of a water system there. R. L. Moore is in charge.

The board of prison commissioners, Frankfort, Ky., is planning to spend $25,000 in equipping a chair factory. Daniel E. O'Sullivan may be addressed.

The cotton gin of John B. Hopson, Tiptonville, Tenn., was burned January 18 with a loss of $7500. The power plant was included in the loss. Plans for rebuilding will be considered at once.

Dyersburg, Tenn., is planning the purchase of a 1,000,000-gal. two-stage centrifugal pump, direct connected to a 2300-volt three-phase motor and one vertical centrifugal pump of 40-gal. per min. capacity, direct connected to a 20-volt, three-phase motor. S. R. Blakeman, superintendent of city water and light plant, is in charge.

W. P. Hays has purchased a controlling interest in the Eagle Saw Works, Chattanooga, Tenn. He was formerly in control of the concern, and will become president or general manager. The present officers are R. F. Calloway, president; O. F. Chichester, vice-president; and L. L. Tate, secretary-treasurer. Considerable improvement in the plant is contemplated. Mr. Hays reported that the saw company had been inconvenienced recently through difficulty in obtaining saw steel from England, but that the American product has been so greatly improved that it is now giving satisfaction.

The Williamson Light & Ice Company, Williamson, Va., is in the market for a 72-in. x 18-ft. return tubular boiler. O. B. Welch is general manager.

The Pavey Electric Company, Dunbar, W. Va., has been organized with $100,000 capital stock for the manufacture of electric motors. Frank and Samuel Pavey, Indianapolis, Ind., and W. T. Moore and Paul Grosscup, Dunbar, are the principal stockholders. The plant will be two stories and 175 x 200 ft. The company's machinery requirements were listed in *The Iron Age*, issue of December 17.

The Wakefield Granite Quarries, Petersburg, Va., whose plant was recently damaged by fire, will rebuild, installing elevating, screening, washing and distributing machinery. Power requirements include a 100-hp. boiler and a 75-hp. engine. The cut stone department was not damaged. A. B. Cook should be addressed.

The Virginia Sand & Gravel Corporation, Petersburg, Va., has been organized with $500,000 capital stock to take over the business of the Norfolk Sand & Gravel Corporation, Norfolk, Va. A plant will be installed on the Appomattox River to handle 500 cu. yd. of gravel a day. George W. Roper, Norfolk, is president.

H. M. Daniel, Nokesville, Va., plans to install a woodworking plant for the manufacture of coops and crates for handling live poultry.

Charles A. McLean, Citizens' Bank Building, Norfolk, Va., is in the market for a second-hand Corliss engine, of 600 to 700 hp.

The Crystal Ice Company, Richmond, Va., is reported to be considering making improvements at a cost of $15,000.

O. D. Oakey, proprietor of the Camden Iron Works, Salem, Va., has purchased the plant of the Roanoke Bridge Company, Roanoke, Va., for about $45,000, and will operate it for the manufacture of structural and ornamental steel, jail equipment, etc.

Birmingham

BIRMINGHAM, ALA., January 25, 1915.

Woodworking machinery and machine tools are in increased demand; and better collections are reported from country merchants, who are realizing on advances to cotton planters. No other changes in conditions are in evidence. The inclination is to expect a general but slow betterment with no significant recovery before the year is at least half over.

It is understood that the Decatur Car Wheel Works, Birmingham, will make improvements in the local plant.

The Western Grain Company, Birmingham, will build a six-bin elevator with a capacity of 20,000 bu. and will install mixing and grinding machinery.

The Farmers Union Warehouse Company, Anniston, Ala., will erect a grain elevator and install mixing machinery.

A company is being organized at Attalla, Ala., with a capital stock of $50,000 for the manufacture of a patented bucket for drilled wells. W. L. Woolley and associates are among the principals.

The Delta Lumber Company, Hurtsboro, Ala., has been incorporated with a capital stock of $25,000.

The Peoples Hydroelectric Company, Birmingham, has applied for incorporation papers. It has a nominal capitalization of $20,000 and proposes to establish hydroelectric plants on the Goose River at Lock No. 2, to supply current to the towns in nearby counties. R. H. Gobb is president. Clem Jowers, G. H. Richardson, and others, are among the incorporators. No immediate or definite plans are announced.

J. H. Garland, Foley, Ala., will establish a vehicle plant.

The Neuhoff Abattoir Company, Nashville, Tenn., it is reported, plans the establishment of a meat-packing and cold storage plant at Macon, Ga., at a cost of $75,000.

The Regar Fountain Company, Tampa, Fla., has been incorporated by L. F. Pearce and Charles Gerkin, and others, with a capital stock of $50,000 to manufacture drinking fountains.

The Carolina Paper Box Company, Winston-Salem, N. C., whose plant was recently burned with a loss of $25,000, plans to secure a new location and start operations by February 15.

St. Louis

ST. LOUIS, MO., January 25, 1914.

The machine-tool market is showing improvement in quantity and tone. As yet most of the buying is for replacement tools and additional requirements of operating plants rather than for new enterprises. Constantly recurring reports indicate that the easier state of capital for investment is having its effect, and that plans are under way for the establishment of new enterprises which will lead to considerably increased buying before very long. Inquiries and transactions are practically all for single tools at the moment and no one industry is notably standing out above the others. More business is in the market than at any time since the war began, perhaps even before that time. Collections are reported good and second-hand tool business is satisfactory.

The American Press Brick Company, Wellston Station, St. Louis, Mo., has increased its capital stock from $60,000 to $75,000.

C. J. & F. C. Briner, electrical engineers, have taken out a permit for the erection of a three-story building at 1007-15 Morgan street, St. Louis, Mo., for a factory, repair shop and warehouse, the building to cost $16,000, exclusive of equipment. The firm is dealing in electrical engines, dynamos and other new and second-hand machinery.

The Translatine Products Company, St. Louis, has been incorporated with a capital stock of $100,000 by Edward A. Raithel, Nat I. Brown and Edward L. Burke and will establish a specialty manufacturing plant.

The Motor Screw Products Company, St. Louis, has increased its capital stock from $3000 to $6000.

The Whitelaw Brothers Chemical Company, St. Louis, has been incorporated with a capital stock of $70,000 by Ralph T., Malcolm and Hamilton Whitelaw and Charles W. and Mahlon B. Wallace to manufacture chemicals, paints, etc.

The St. Louis Bed & Mfg. Company, St. Louis, has increased its capital stock from $125,000 to $208,000.

The plant of the Sperry Mfg. Company, St. Louis, was destroyed by fire with a loss of about $25,000. The business will be re-established in another location.

The Federal Sash & Door Company, Kansas City, Mo., has increased its capital stock from $25,000 to $100,000.

The Bathurst Stove Company, Kansas City, Mo., has been incorporated with a capital stock of $12,000 by M. G. Reed, T. T. Bathurst, and others, and will operate a stove foundry.

The National Ornamental Terra Cotta Company, Kansas City, Mo., has been incorporated with a capital stock of $250,000 by Harry Stiver, Charles W. Lovitt and J. L. Davies.

The Consolidated Marble & Stone Company, Carthage, Mo., has increased its capital stock from $50,000 to $125,000.

The factory and powerhouse of the American Hominy Company, St. Joseph, Mo., has been burned with a loss of $110,000. The headquarters of the company are in Indianapolis.

Additional equipment, power plant, etc., to cost about $100,000, is reported as planned by Swift & Co., Chicago, in connection with the St. Joseph, Mo., branch. Six 500-hp. boilers will be installed.

The Siloam Springs Ice & Water Company, Siloam Springs, Ark., will install an ice plant of about 25 tons daily capacity.

The Pattonsburg Electric Light Company, Pattonsburg, Mo., of which O. L. Wright is president, will install a 10-ton ice machine to cost about $4500.

A grain elevator to cost about $150,000 is planned by the Chicago & Alton Railroad at Kansas City, Mo. H. T. Douglas, chief engineer, Chicago, is in charge.

A franchise has been granted by the city of Slater, Mo., to T. C. Brooks & Son for the equipment and operation of a waterworks plant.

St. Joseph's Hospital, Kansas City, Mo., about to erect a new $400,000 building, is reported as requiring heating and power equipment for it.

The Home Oil & Mfg. Company, Augusta, Ark., has been incorporated with a capital stock of $60,000 by Nathan Gregory and others, and will establish a cottonseed oil mill.

The Thane Lumber Company, Arkansas City, Ark., has been incorporated with a capital stock of $25,000 by H. Thane, A. Kimball and E. O. Johnson, and will install mill equipment.

The Garrison Revolving Plow Company, Bergman, Ark., will build a plant to manufacture a combined cultivator and breaker. J. G. Taylor is president and W. H. Harp vice-president and manager. Equipment is being sought.

Rector, Ark., is inviting bids for a waterworks plant to cost $29,000, and a sewage disposal plant to cost $27,000. Frank L. Wilcox, St. Louis, is the engineer in charge.

J. P. Brower, Fayetteville, Ark., will equip a plant for the manufacture of furniture and is reported in the market for machinery.

The Arkansas Oak Flooring Company, Pine Bluff, Ark., has been incorporated with a capital stock of $50,000 by H. W. Coles, James W. Reynolds, and others, and will install a plant of 30,000 ft. daily capacity.

The Staple Post Mold Company, Tulsa, Okla., has been incorporated by H. L. Pettit, Westerville, Ohio, and others, and will arrange for a manufacturing capacity of 2000 fence posts per week.

Yale, Okla., will proceed with the construction of a waterworks and electric light plant to cost $32,000.

Pearson & Hayton, Billings, Okla., will install a flour mill of 25 bbl. daily capacity.

John M. Degrange, Shattuck, Okla., will install a flour mill of 25 bbl. capacity, one 25-hp. oil engine and other machinery.

At Helena, Okla., George Kasky will equip a flour mill of 25 bbl. daily capacity.

The Stephens Machinery & Foundry Company, Lawton, Okla., has been incorporated with a capital stock of $10,000 by J. R. Yarborough, Frederick Cowell and B. R. Stephens.

The MacThwaite Oil & Gas Company, Ada, Okla., will install a pipe line and pumping plant to supply gas to the city of Ada from nearby fields.

The Sun Gasoline Company, Tulsa, Okla., has been incorporated with a capital stock of $100,000 by Thomas Chestnut, T. K. Smith and C. P. Zuinlan and will start a plant for gasoline manufacture.

The Gibbons Elevator Company, Purcell, Okla., has been incorporated with a capital stock of $15,000 by James E. and M. F. Gibbons, and others.

Cordell, Okla., will receive bids until the end of January for a waterworks extension to cost about $75,000.

The H. Weston Lumber Company, Logtown, Miss., will rebuild the plant recently burned, and install equipment of 50,000 ft. daily capacity.

The Southern Mfg. Company, Columbus, Miss., will install equipment for the manufacture of silos.

The Barber Iron Works, South Mansfield, La., has been incorporated with a capital stock of $15,000 by J. C. Barber, A. J. Herbert, and others, and will equip a metal-working plant.

Texas

AUSTIN, TEXAS, January 23, 1915.

Much cotton is being marketed at this time and all lines of business and industry feel the beneficial effects of the increased volume of money that is being placed in circulation. The machinery and tool trade still remains dull; but it is better than it was a month ago.

The Gulf Pipe Line Company, Houston, will build about 25 miles of oil pipe line and will erect at Lynchburg six steel storage tanks and a fuel-oil mixing plant.

The Southwestern Portland Cement Company, El Paso, has increased its capital stock from $1,100,000 to $1,500,000 to provide funds for building a cement manufacturing plant at Victorville, Cal. Carl Leonardt, Los Angeles, Cal., is president.

The Progressive Milling & Mfg. Company, Katy, has been organized with a capital stock of $5000 by W. R. Boyd, Jr., and others.

E. W. Carpenter, Columbus, Ohio, and associates, are arranging to build a cement and plaster mill at Alamogordo, N. M.

J. W. Shank, Benjamin, Mo., will install several pumping plants to irrigate land near Alamogordo, N. M.

L. B. Hubbard & Brother, Matador, are installing an electric light and power plant.

It is stated by P. C. Wadsworth, Texas City, one of the promoters of the proposed cotton mill, that it will cost about $300,000. The town has donated a tract of 1000 acres of land as a site for the proposed mill.

The Magnolia Petroleum Company, Birdville, a suburb of Ft. Worth, will erect 30 additional steel oil storage tanks at a cost of about $250,000.

E. F. Renken, Snyder, will install an oil engine, etc., in his electric light and power plant at a cost of about $15,000.

Arthur Foster, Teague, and associates, plan to pipe natural gas from Montgomery, Grimes and Walker Counties to Houston.

Halstead Lindsey, Johnson, Ariz., has taken an option on the Benson smelter. He plans to rebuild the plant.

The International Smelting & Refining Company, Miami, Ariz., is erecting a copper reduction plant.

San Francisco

SAN FRANCISCO, CAL., January 19, 1915.

Local merchants all report quiet business in machine tools, with orders limited almost exclusively to small tools for immediate delivery from stock. In some cases delay in shipment of lathes by manufacturers is noted, due to recent export requirements. Many small inquiries are coming from country garages and blacksmiths, who are quite generally enlarging the scope of their work. Much of this business goes to second-hand dealers. The larger shops find uncertain labor conditions a deterrent factor to business. As a rule the revival is most apparent in the less important places. Mining machinery, however, is receiving more attention, and road-building equipment is moving well for this time of year. Some small orders for planing mill equipment are appearing, though sawmill machinery is neglected. Inquiry for pumps is increasing, including both large and small units; and small power units, steam, gas and electric, are in very fair demand. Construction is being resumed on some large hydroelectric projects, interrupted during the last two years.

George H. Woodward, Bush street near Van Ness avenue, San Francisco, is installing some new tools and making improvements to his automobile shop.

The Blanchard-Brown Company, 660 Market street, San Francisco, is preparing to build an asphalt plant at Geneve and San Miguel streets.

The Fire Commissioners, San Francisco, are taking figures on 28 or more 10 to 15-ton hydraulic jacks.

The Riverbank Planing Mill, Fresno, Cal., is putting in several new machines.

The Compressed Air & General Machinery Company, Stevenson and Ecker streets, San Francisco, has applied for permission to change its name to General Machinery & Supply Company.

The Valley Ice Company, Bakersfield, Cal., is enlarging its plant. A 400-hp. electric motor will be installed.

The Comstock Pumping Association, Virginia City, Nev., is preparing to install several large pumps.

To handle the water for 640 acres of rice land near Briggs, Cal., W. R. Spence is preparing to install a pumping plant to cost $10,000.

It is announced that W. C. DeCamp, receiver for the Pacific Copper Mining Company, will sell all machinery, tools and implements of the company to the highest bidder on February 9, at the company's camp near Crown King, Ariz.

The Southwestern Machinery Supply Company, Deming, N. M., has been incorporated with a capital stock of $50,000 by Frank Monsor, L. A. Thompson, S. B. and J. A. Rhea and R. D. Sidney.

South Pasadena, Cal, has authorized $200,000 of bonds for the construction of a complete sewer system. B. V. Garwood is city clerk.

The Southwestern Metal Mfg. Company, Albuquerque, N. M., is moving to El Paso and will build a plant there. The company manufactures silos, culverts and all heavy sheet and metal products.

The Bent Construction Company, Los Angeles, has ordered a lot of machinery for the manufacture of sewer pipe.

The Pacific Northwest

SEATTLE, WASH., January 19, 1915.

Six vessels have been chartered the past few days for delivery of lumber from North Pacific ports to foreign shores. This caused noticeable activity in the local lumber trade, and mills are preparing for extra heavy service. The world-wide demand for wheat and breadstuffs has encouraged the growers in the eastern part of the State to put every available acre of land into wheat and like products, and machinery dealers will benefit from this enormous crop by furnishing machinery for its planting and harvesting. December's business through the ports of Washington shows a decidedly cheerful tone, as indicated by reports of the collector of customs. The export trade for the month is second only to November, the record month of the year, and amounted to $5,191,971.

It is authoritatively reported from the Portland office of the Southern Pacific Railway Company that it is making preparations to lay from 2,000,000 to 3,000,000 ties in 1915, and the orders will be distributed among the mills of Oregon and Washington.

The construction of the new plant of the Pacific Iron Works, Portland, Ore., is rapidly nearing completion and the company expects to move within two weeks. The buildings, two in number, represent a cost of $25,000. Two additional buildings will be erected in the spring.

The California Paper Board Mills, San Francisco, Cal., will construct a boxboard mill in Seattle with a capacity of 20 tons a day.

The Coin Machine Company, Portland, will construct a two-story reinforced concrete plant to cost $60,000; and extensions are provided for which will necessitate an ultimate cost of $100,000. T. I. Potter, Corbett Building, is president.

The Electric Boat Company, 11 Pine street, New York City, which was awarded contract for building three submarines, has sub-let it to the Seattle Construction & Dry Dock Company, Seattle. The vessels will cost $450,000 each, and work will start at once, the contract to be completed within 18 months.

The Inland Empire Paper Company, Spokane, Wash., according to reports, will build a sulphide plant which will cost $200,000. At an early meeting, the stockholders will also vote on the construction of a dam and power plant, which is estimated to cost $300,000.

According to Seattle officials of the Stone & Webster Corporation, Boston, that company contemplates the construction of a power plant on the Skagit River, 22 miles above Marblemount. The corporation has recently paid fees on two sites. Plans are practically completed.

The MacCamy Air Cooler & Condenser Company, Spokane, has been incorporated for $150,000, and will have its condenser constructed at the Union Iron Works. H. E. MacCamy is superintendent of both companies. The plant of the latter company will be enlarged, and machinery added.

The Oregon Lumber Company, Baker, Ore., is completing plans for a lighting plant, to furnish light and power. Light for the Sumpter Valley Railroad and power for the Sumpter Valley machine shops will also be supplied. The machinery will include a steam boiler and a 72-kw. motor. Steam will be generated from sawdust.

The Empire Mfg. Company, Spokane, Wash., and the Pendleton Iron Works, Pendleton, Ore., have been amalgamated under the name of the Empire Mfg. Company, Pendleton, which has a capital stock of $125,000. The iron works will be shut down for a short time, to make needed repairs, and an addition will be made. Philip Laber is president, and Charles L. Kik, vice-president. A rotary pump for irrigation purposes will be one of the principal products of the plant.

Eastern Canada

TORONTO, ONT., January 25, 1915.

Since the turn of the new year confidence is becoming a little stronger and business a little better. The most interesting feature is the manufacture of supplies for the war department. The most important are those for shrapnel shells. The steel companies are doing the preliminary work on these, but over 50 machine shops in different parts of the Dominion are getting some share of the work.

Many of the firms who have obtained orders for shells and other supplies from the British, French and Russian governments are finding it necessary to purchase additional equipment. The total value of the orders so far received for shrapnel shells is about $23,000,000. It is the general opinion among manufacturers that in its net results the war has been beneficial to the industrial interests of the Dominion. Business in iron and steel is showing more activity, and more orders have been booked the past few weeks than for months preceding.

The Mueller Mfg. Company, Sarnia, Ont., is to expend $20,000 on new machinery for the manufacture of war material.

The Ontario Malleable Iron Works, Oshawa, is to install new machinery for manufacturing war supplies.

The Polson Iron & Shipbuilding Company, Toronto, is to install a special plant for the manufacture of shrapnel shells. J. B. Miller is president and general manager.

Canadian Vickers Company, Montreal, has eight keels laid for submarines for the British Government.

The Buffalo Forge Company, Berlin, Ont., has an order from the Russian Government for shrapnel shells and will need additional equipment.

A factory is being erected by the Windsor Mfg. Company, Windsor, Ont.

The Town Council, Essex, Ont., is considering the purchase of a steam pump and boiler.

William Wrigley & Co., Ltd., chewing gum manufacturers, Carlaw avenue, Toronto, are erecting a three-story reinforced concrete factory, 100 x 300 ft., at a cost of $65,000. Pragg & Perine, Hamilton, are the architects.

The Sylvester Mfg. Company, Lindsay, Ont., purposes erecting a factory for the manufacture of gasoline engines and pumps. The Town Council plans to advance the company a loan of $10,000.

The Epiett Mfg. Company, Cumberland, Ont., has been incorporated to manufacture paints, etc. The capital stock is $100,000. R. K. Eplett, W. Graham and S. Karr are the incorporators.

A furniture factory is to be started by the Ball Furniture Company, Ltd., Hanover, Ont.

Cobourg, Ont., has adopted a by-law authorizing $50,000 of bonds to aid the Federal Steel & Foundry Company in the establishment of a plant for manufacturing iron and steel products, forgings and castings.

Wallaceburg, Ont., has recently carried a by-law to expend $9000 for a hydroelectric power plant.

The Ogilvie Milling Company, Ft. William, Ont., is to build a 750,000-bu. addition to its elevator at an estimated cost of $200,000. Barnett-McQueen Company are the contractors.

The Nova Scotia Steel & Coal Company, Ltd., New Glasgow, N. S., has appropriated $65,000 for new equipment.

The Canadian Series Company, Ltd., 210 Victoria street, Toronto, has been incorporated to manufacture toys, etc. The capital stock is $100,000.

It is announced from Ottawa, Ont., that the Standard Chemical Iron & Lumber Company of Canada, Ltd., is reducing its capital stock from $6,000,000 to $5,000,000.

The Regal Automobile Company, Detroit, Mich., will construct a large addition to its plant at Berlin, Ont., in the spring. It is in the market for machinery. Mr. Nyberg is branch manager.

C. Allison Peck, Hillsboro, N. B., will establish a new hardwood flooring plant to replace the one recently destroyed by fire. Machinery will be required.

The Lake Erie & Northern Railway, 20 West Mill street, Brantford, Ont., will erect a roundhouse.

The Canadian Machinery Corporation, Galt, Ont., will make additions to its plant.

The Union Metal Mfg. Company, Canton, Ohio, will erect a Canadian factory at Galt, Ont., next spring, for the manufacture of ornamental posts, etc.

Machinery will be purchased by A. Anderson, care of Procter Gamble Company, Ivorydale, Ohio, for the new $1,000,000 soap factory the company is erecting at Hamilton, Ont.

A hydroelectric power plant will be erected by Frame Brothers, Parham, Ont., to furnish power and light to their lumber mill.

Work will be started in the spring on a sash and door factory for M. T. Schurman & Co., Summerside, P. E. I., to replace the one destroyed by fire. New machinery will be required.

The Mueller Mfg. Company, River Road, Sarnia, Ont., is in the market for $8000 worth of steel-working machinery. G. R. Parry is in charge.

Kieran, Crawford & Gray, Ltd., Montreal, has been incorporated with a capital stock of $50,000 by Peter J. Kieran, James G. Gray, Joshua W. Crawford, and others, to manufacture machinery and material for engraving, printing and lithographing.

The Ideal Incinerator & Contracting Company, Ltd., Toronto, has been incorporated with a capital stock of $100,000 by John T. White, 10 Melbourne avenue; Kenneth W. Wright, George R. Sproat, and others, to manufacture heating apparatus, fire closets, boilers, steam plants, etc.

The National Industrial Association, Toronto, has prepared plans for a machinery hall to cost $105,000. It will ask the City Council for the necessary appropriation.

Government Purchases

WASHINGTON, D. C., January 25, 1915.

The date of the opening of sealed proposals for a 150-ton floating revolving crane for Norfolk, specification No. 2092, has been postponed from January 16 to February 13. William M. Smith is acting chief of the bureau.

Plans and specifications have been prepared by the supervising architect, Treasury Department, Washington, for a complete central heating, lighting and power plant for Washington. Only a short time will be allowed for the preparation of estimates.

Bids were received by the Bureau of Supplies and Accounts, Navy Department, Washington, January 12, for furnishing supplies to the navy yards, as follows:

Schedule 7719—Ordnance

Class 41, Washington—One 700-ton double-action toggle press—Bid 32, $12,250; 216, $16,204 and $14,524; 259, $12,475 and $12,300.

Class 42, Washington—Four geared head lathes—Bid 86, $892; 93, $893; 105, $1189; 124, $924.50; 149, $1040 and $775; 167, $1183.

Class 43, Washington—One flat turret lathe—Bid 117, $1720 and $1625; 124, $1880; 149, $2252; 239, $2252.

Class 44, Washington—Two geared head lathes—Bid 86, $1247; 93, $1248; 105, $1695; 124, $1273.50; 149, $1345; 167, $1589.

Schedule 7720, Construction and Repair.

Class 51, Boston—One double-acting guided-ram steam hammer—Bid 35, $590; 149, $625; 167, $375; 169, $460; 173, $640.

Schedule 7721, Construction and Repair

Class 52, Charleston—One pipe-cutting and threading machine—Bid 32, $416.76; 83, $390; 86, $374; 109, $416.76; 124, $392.50; 149, $690 and $675; 167, $727; 169, $460 and $394; 173, $420.

Similar bids were received by the Bureau of Supplies and Accounts, January 19, as follows:

Schedule 7745, Ordnance

Class 51, Washington—One motor-driven high-speed drill—Bid 117, $1287, $1137, and $1013; 149, $1160 and $1090; 178, $1295.

The names of the bidders and the numbers under which they are designated in the above lists are as follows:

32. Bailey, Libby Company; 35. Buffalo Foundry & Machine Company; 83. Frevert Machinery Company; 86. E. L. Fraser; 93. Garvin Machine Company; 105. Hendey Machine Company; 109. Jarecki Mfg. Company; 117. Jones & Lamson Machine Company; 124. Kemp Machinery Company; 149. Manning, Maxwell & Moore; 167. Niles-Bement-Pond Company; 169. D. Nast Machinery Company; 173. Prentiss Tool & Supply Company; 178. Swind Machinery Company; 216. Toledo Machine & Tool Company; 239. Warner & Swazey Company; 259. D. H. Stoll Company.

The following bids were received by the chief of the bureau of yards and docks, Navy Department, Washington, January 9, for furnishing one 15-ton locomotive crane for Boston:

Item 1, price for crane, complete; item 2, standard double-truck crane with holding drum driven from hoisting drum by adjustable slip friction will be considered; item 3, under this item bids are desired on a 10-ton crane; item 4, deduct from items 1, 2, or 3 if sides of cab are omitted.

Link-Belt Company item 1, $6315; 2, $6000; 4, $135.

Orton & Steinbrenner Company, item 1, $6229; 2, $6119; 3, $4665; 4, $100.

Ohio Locomotive Company, item 1, $7500; 2, $5600; 3, $6800; 4, $100.

The Industrial Works, item 2, $6300; 3, $5350; 4, $125.

The McMyler Mfg. Company, item 2, $5996; 4, $75.

Brown Hoisting Machinery Company, item 1, $6500; 3, $5200.

The Browning Engineering Company, item 2, $5980; 3, $5210.

American Hoist & Derrick Company, item 2, $5462; 3, $4162; 4, $118.

Trade Publications

Pipe Coverings.—Armstrong Cork & Insulation Company, Pittsburgh, Pa. Pamphlet. Contains interesting facts on the value of this company's cork covering for refrigerating pipe, steam lines, feed water heaters, pumps, boiler settings, etc. Illustrations of various representative plants are presented, together with data on the size of the installation and the quantity of heat insulating material used.

Friction Clutches.—Conway & Co., Cincinnati, Ohio. Catalogue. Illustrations and descriptive matter explain the operation and use of a friction clutch containing but five parts. Two types are made, the compression, which is designed for use in connection with shafting and in all places where the transmission of power is by a belt or chain, and the expansion which is suitable for special machinery and couplings. The illustrations include views of the various clutches complete and separated into their component parts, and tables giving the dimensions of the several sizes of each that can be supplied are included.

Railroad Track Scale.—Buffalo Scale Company, Buffalo, N. Y. Booklet. Pertains to a suspension bearing centre connected railroad track scale which is characterized by a simple form of construction. Each bearing consists of only five pieces and in addition the use of the center connection eliminates the necessity of an equalizer or rocker bar. The construction of the scale and its various parts is described at some length, the text being supplemented by numerous blueprints of the various parts. Views showing installation in railroad yards and steel plants are included.

Plate Sheet Piling.—Lackawanna Steel Company, Lackawanna, N. Y. Bulletin No. 107. Contains a brief description of a new form of plate sheet piling which was illustrated in *The Iron Age*, October 8, 1914. It is cold rolled from steel plate into a special curved section. Drawings of the piling are presented together with diagrams and illustrations of it in use.

Cranes.—Alfred Box & Co., Philadelphia, Pa. Bulletins Nos. 800 and 1200. The first describes and illustrates a line of electric traveling and jib cranes, most of the views being those of actual installations for handling a great variety of material. The second bulletin illustrates a number of different types of monorail hoists that can be provided for either direct or alternating current service. The various features of the hoists and the track with which they are used are brought out by brief paragraphs alongside the illustrations of these points. Diagrams and dimension tables are included.

Steel Castings.—Tropenas Converter Company, 50 Church street, New York City. Pamphlet. Deals with the production of converter steel castings as compared with those made in the electric furnace. The various points of economy, ease of operation, refining possibilities, loss from oxidization, etc., are discussed for both processes. A number of illustrations of steel castings made in converters are included.

Heating and Ventilating Apparatus.—B. F. Sturtevant Company, Hyde Park, Boston, Mass. Catalogue No. 195. Describes concisely by text and table all of the standard products of this company. The brief tables give an idea of the capacity of each type of fan at various speeds, the horsepower developed by its engines, turbines and motors and the over-all dimensions of each line of apparatus. The other lines listed include high-pressure blowers, hot-blast heaters, pumps and receivers, electric generators, fuel economizers, air heaters, mechanical draft appliances and conveying, drying and dust collecting systems.

Grinding Machines.—St. Louis Machine Tool Company, St. Louis, Mo. Two circulars. Relate to two types of grinding machines, one of which is regularly furnished with a self-contained countershaft, while the other is intended for a belt connection to a separate shaft. Illustrations of the machines are presented, together with brief descriptions and condensed specification tables. The reverse side of each circular is given over to illustrations of parts of the two machines and the modifications which can be furnished.

Excavator Traction.—Bucyrus Company, South Milwaukee, Wis. Pamphlet. Describes a traction of the caterpillar type for drag line excavators. The principal advantage claimed for this device is that the machine can be moved easily without the necessity of building a platform or laying rollers. A description of the traction mechanism and the way in which it operates is included as well as engravings of the mechanism and an excavator equipped with it turning a curve.

Street Railroad Ties.—National Steel Tie Company, Harrisburg, Pa. Pamphlet. Shows the construction and use of a tie that is made from a trough-shaped piece of steel plate, which is intended to be filled with concrete, asphalt or any other desired substance. An illustrated description of this tie appeared in *The Iron Age*, October 8, 1914.

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